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Cure for Trondu

A piece of Alum of the size  
of an Egg (Hens) dissolved in  
a pint or quart of water Given  
as a drink . -

Case for Thomas  
Hence of the  
to the 17th of the  
a good a good of the  
in a small



*J. W. Cooke*

A Drench of weak Lye  
has been found to be an ex-  
cellent remedy for the Cholera  
in Horses - made by pouring  
2 or 3 pints of <sup>cold</sup> water on a dou-  
ble handful of unleached ashes  
After being stirred a little -  
when subsided will be fit for  
use.

Copraes given in the pro-  
-portion of a tea spoon full  
to a full grown hog - is said  
to cure the swelling of the  
throat in so destructive among  
the Hogs

## T R E A T I S E

ON THE

PREVENTION OF DISEASES

INCIDENTAL TO

H O R S E S,

FROM BAD MANAGEMENT IN REGARD TO

STABLES,		WATER,
FOOD,		AIR, AND EXERCISE.

TO WHICH ARE SUBJOINED,

O B S E R V A T I O N S

On some of the Surgical and Medical Branches of  
F A R R I E R Y.

By J A M E S C L A R K,

FARRIER TO HIS BRITANNIC MAJESTY, HONORARY  
AND CORRESPONDING MEMBER OF THE  
SOCIETY OF AGRICULTURE, &c.  
AT ODIAM IN HAMPSHIRE.

——— *Servare modum, finemque tenere,*  
——— *naturamque sequi.*

LUCAN.

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From the SECOND EDINBURGH EDITION, Corrected and Enlarged.

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PHILADELPHIA:

PRINTED BY WILLIAM SPOTSWOOD.





## INTRODUCTION.

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——To hold the golden mean,  
To keep the end in view, and follow Nature.

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**T**HE propriety of this excellent maxim is, perhaps, in few cases more applicable than in the following subject, relating to the Management of Horses. Every judicious observer must have had an opportunity of seeing the many absurdities daily committed in the treatment and management of this animal, in a great variety of cases, and, at the same time, of observing the bad consequences that follow from it; and perhaps there is no subject of equal importance, in which people are more apt to be led by prejudice in favour of certain established modes and customs. But a prejudice

in favour of popular customs, however plausible they may appear, when adopted without any inquiry into their propriety and usefulness, farther than the sanction of the vulgar, can seldom stand the test of philosophical research.

It is to be regretted with what obstinacy many ridiculous absurdities are persevered in, relating to horses, in opposition to experience, and to common sense, which nothing can ever banish from stables, but the interposition of those whose real interest it will be, and who should assume the right they have to think for themselves, without being dictated to by those they should command.

The many advantages we derive from horses, their real and solid services, render them valuable; and every thing which tends to improvement in the management of them, or in preventing those diseases they are subject to, (by error in management,) are objects worthy of attention.

Horses, in their natural state, or running at grass in the fields, do not require much attention from man. If they have sufficient pasture and water, they eat, drink, and run about at pleasure. Their wants are few, and easily supplied; and they enjoy a perfect state of health. But, in a domesticated state, from a variety of circumstances, their constitutions undergo a considerable change. They require particular care and attention in the management of them. To be sheltered

from the weather, and to be fed with rich food, to enable them to perform with vigour the various labours imposed on them, and which too frequently are exacted with rigour and severity, beyond what they are well able to bear. Hence the unnatural restraint, the confinement in too close foul-aired stables, together with the violent exercises they are exposed to, and the injudicious management of them in a variety of respects, render them liable to a long train of diseases, which sooner or later either proves fatal to them, or lays the foundation of some chronic disorder, which art can neither palliate nor remove.

The British horses are justly esteemed the finest in the world; and, what is very remarkable, it is the finest and best of these horses that too frequently are most exposed to be hurt, from an injudicious method of treating them; whilst those of an inferior degree, being left more to themselves, or, in other words, are allowed to live more agreeable to their nature, and free from those established practices observed in the more elegant stables, perform the task required of them to a good old age in health and soundness: a mode of refinement, if it may be so called, prevails in the stables where fine horses are kept, every thing respecting the management of them is carried almost to an extreme, inso-much that there is hardly any medium observed. Thus, a certain degree of warmth is agreeable, and even necessary, to horses,

yet they generally are kept too hot, at the same time frequently loaded with body-cloths. Food, which ought to be distributed according to their work or exercise, is frequently dealt with too liberal a hand; whether they work or not, the food is always continued the same, without considering whether the waste in the constitution requires a greater or a lesser supply of nourishment. Exercise, that necessary article for preserving them in health, and fitting them for the active exercises required, is too frequently neglected. Fresh air, that exhilarating principle of life, which is so essentially necessary for the health of all animals, is but too much excluded from their stables. But that I may not anticipate my subject, I shall only observe, that the health and soundness of horses depend greatly on the manner in which they are treated; and it ought always to be observed, as a general maxim, that the nearer we approach in the management of horses, to that which is most agreeable to their nature, they will be in the greater perfection; and the farther we deviate from this rule, we lay a restraint upon them, and injure their constitutions.

In prosecuting this subject, my design is not to advance or support any extravagant hypothesis respecting medical theories, or to recommend insignificant nostrums, as infallible remedies for this or that disease or lameness; but to make some general remarks and



observations upon the common methods at present in use in the management of horses, and to show the bad effects which may arise from any excess, neglect, or ill conduct, observed in the management of them in these articles. At the same time, I shall point out the means by which many diseases and lameness may, in a great measure, be prevented.

This may be considered, at first view, as presuming too much; but it is surely of greater importance to endeavour to prevent diseases and lameness in horses, especially when it is practicable, by proper care and attention in the managing of them, than by an opposite conduct, to run the risk of their health and soundness, and afterwards have recourse to precarious and uncertain cures; for many diseases and lameness in horses might, without all doubt, be prevented, by proper care and attention, which, when once they have taken place, cannot so easily be removed. Slight causes, when neglected, often produce the most violent complaints, which art, in many cases, can only palliate; and it ought always to be remembered, that unless horses are in health, and thoroughly sound, they are not fit for the laborious exercises required of them.

This subject has already, in some degree, been treated by authors who have written on the diseases of horses. The Right Honorable the Earl of Pembroke, at the end of his *Military Equitation*, has likewise, with

great propriety and judgment, given some remarks on the treatment of military horses, which, in many respects, are applicable to horses in general. Had his Lordship extended his plan, this, or any publication on that particular branch, would perhaps have been superfluous: as this, however, has not been done, there is still a large field for improvement, I apprehend it may be proper to prosecute this branch of useful knowledge, as it is of importance, and necessary to be attended to by every one who wishes to have his horse in health, strength, and fit for action; and, at the same time, is desirous of acquiring some insight into the most prevailing causes of the diseases to which horses are liable. It will also serve as a necessary preliminary to a subsequent publication on the diseases of that noble animal.

In order to render the subject more easily understood, I shall endeavour to avoid all prolix and abstract reasoning, and found my arguments chiefly upon the analogy which subsists between the human body and that of a horse; at the same time I shall avail myself of facts taken from different authors on the subject, and from my own observation and long experience in the management of horses.

Health is the faculty of performing all the functions of animal life in the most proper and perfect manner; that is, when respiration or breathing is performed in a free, easy, regular manner; when a horse can bear exercise or labour, without becoming short-

breathed, faint, or appear too much fatigued, in proportion to the labour or exercise he has undergone; when he eats and drinks moderately, with a good appetite, and appears refreshed by it; when his hair lies smooth and shining; when the excretions of dung, urine, &c. are discharged in a due proportion and consistency; and when a horse appears lively, active, and full of spirit.

In order to preserve horses in this healthful state, it is not necessary to have recourse to medicine or bleeding, &c. &c. by way of preventing diseases, or preserving them in health. The most effectual means to attain this end, are a proper attention to the management of them in general, which partly consists in accommodating them with well aired stables, with wide stalls, and allowing them wholesome and nourishing food and drink, in proportion to the labour required of them; together with well-timed exercise, when they are not otherwise employed; to which may be added, good rubbing and dressing, twice or thrice every day. There are likewise several other considerations relating to the management of horses, under a variety of circumstances, which are necessary to be attended to. It will therefore be proper to consider each of these separately under their different heads at the same time to show wherein the errors in the management of horses at present lie, and to point out the proper means by which they may be preserved in a healthful active state.

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# OBSERVATIONS

## ON THE

### MANAGEMENT OF HORSES.

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#### CHAP. I.

#### OF STABLES.

**Y**OUNG horses generally are accustomed to live and breathe in a pure open air till they come of age, and are fit for labour : it is then found convenient to house them. This produces a considerable change in their bodies, and makes them liable to be greatly affected by the temperature of the air which surrounds them, and in which they breathe.

That the generality of stables are kept too close and hot, requires no demonstration, as every one who goes into them, (even when the weather is pretty cool) must have discovered this from their own feelings ; and, in the summer season, the heat within them is increased to a very great degree. What renders it still worse, it frequently happens, that from the situation and structure of many stables, no opening can be made to allow a sufficient quantity of fresh air, so as to enable horses confined in them to breathe with any tolerable degree of freedom. The door

is the only entrance for air, and that can only happen occasionally when it is open. It is true, the intercourse that must unavoidably take place through the day in going out and in, renders such stables tolerably fresh aired; yet in the mornings, when the door has been shut up for some hours through the night, and especially in summer, the heat is intolerable, and the air so foul, that a man can hardly breathe in it, whilst, at the same time, the sharpness of the salts, arising from the horse's urine, &c. attacks his nose and eyes, and occasions a copious discharge of tears.

Many of the hovels at present used as stables do not even deserve the name; and it is surprising that, considering the value and usefulness of horses, so little attention is paid to their health in this respect: for surely there can be nothing more hurtful than keeping a number of them (perhaps 30 or 40) shut up in a close warm stable, where they must constantly breathe a hot foul-air, which, at the same time, is strongly impregnated with the putrid steams of their own dung, wind, and urine, beside the exhalations that arise from their bodies, which, in this case, are kept in a constant strong perspiration, by the great heat of the air which surrounds them; and, to add to all this, they are perhaps wrapped tight up in body-clothes. How can it be expected that a horse, who has passed the night in this situation, should be active and vigorous to perform his day's work? Will he not rather be faint, languid, and dull, his whole system as it were being unhinged, and in a relaxed state. Let any man, who is an advocate for this treatment of horses, try the experiment on himself; let him sleep in a heated close room, covered up with clothes, sweat it out for the night, and try

the condition he will be in next day for any employment whatever.

Although the description I have given of the situation of horses in large close stables through the night, may appear exaggerated to those who have not had an opportunity of knowing it from their own observation, it is, however, a true one; and the same observation will hold with respect to those stables that are of smaller dimensions, even although they should contain fewer horses. If, at the same time, the stable is made so close as to exclude the admission of fresh air, it is well known to be a common practice to shut up every crevice that would admit the least quantity of air. The very threshold of the door is choaked up with dung; and even the key-hole is filled up with straw.

Every man knows, from his own experience, that, when a number of people are met together in a close room, the air within it becomes moist and hot, which renders breathing difficult: and, if continued in for a length of time, this uneasy sensation would be increased. In churches, or crowded assemblies lighted with candles, the effects of a heated foul air is evident to the sight from the lights burning dim and very faintly; and although the loftiness of the roofs in such places contributes to render it less perceptible to those who are on the lower or ground floor, (as the heated foul air always ascends); yet, to such people as are in the higher parts or galleries, the oppression it occasions in breathing is great, the perspiration becomes profuse, and their thirst excessive. The bad effects of breathing long in a heated foul-air is but too well known, and will be remembered by every one who has heard of the unfortunate affair of Calcutta black hole.

The lowness of the generality of stable roofs



renders them unwholesome from this circumstance alone ; the horses heads being too near the stable roof, are under the necessity of breathing a heated foul-air, almost constantly. During the time they are confined in the stable, especially through the night, when the doors, &c. are shut up, it is still worse in the warm months of summer. A heated foul air is noxious to animal life in general. How then can it be expected that horses should thrive in it ? At the same time, can there be any thing more inconsistent than keeping horses warm to an excess in the house, by the use of body clothes, in a constant state of strong perspiration, and stripping them naked the moment they are to go abroad in all weathers ? The constitution of a horse, strong as it is, cannot withstand such irregularities : it must, and indeed does, too often fall a sacrifice to this manner of treatment. The sudden and frequent transitions which horses undergo, almost every day, from being surrounded with, and breathing a hot foul air through the night, and suddenly exposed to a sharp piercing cold air, and *vice versa*, from a cold to a hot, were there no other causes, are sufficient of themselves to produce a number of the most violent diseases. It is to be observed, that great heat and profuse perspiration dissipates the watery parts of the blood, and renders it too thick for circulation ; and from that cause alone many diseases proceed. The constant inspiring of a hot foul air does not expand the lungs sufficiently, so as to promote the circulation of the blood through them ; hence it is accumulated, and proves another source of diseases in that organ. It likewise renders them liable to fevers, faintness, languor, frequent sickness, and loss of appetite. It exposes them to all those external complaints which

arise from obstructed perspiration, as rheumatism, tumours in the glands, scabs, lumps, scales on the skin, staring of the hair, &c. But the danger is still greater when the perspirable matter that should be carried off in the ordinary course is thrown upon some of the internal viscera, as the lungs, intestines, brain, pleura, &c. From the first of these proceed coughs, peripneumony, or inflammations of the lungs, consumptions, &c. From an affection of the intestines proceed obstructions in the bowels, and diarrhoea, or *scouring*, as it is called in horses. When it settles on the brain, it produces vertigo, or staggers, apoplexy, epilepsy, &c. And when on the pleura, it is attended with the most acute pains or stitches; symptoms which nearly resemble those of the gripes or colic. These complaints, if not speedily relieved, generally prove fatal to horses.

Together with the heated foul air which generally prevails in such stables, as are kept too hot and close, there is always a dampness or moisture. This is occasioned by their being made too close, and kept so; insomuch that no fresh air can be admitted into them, but what passes in at the stable door, and that only, as I have already observed, when it is occasionally open. Hence the moisture from the horses breath (and which may be increased from a low or damp situation) gathers, or is collected, in large drops on the roof, walls, and glass windows, and runs down in small streams. At the same time, the stable is filled with a hot, damp, and moist air, which is not only extremely pernicious to horses health, but destructive to their furniture of every kind. Foul air, whether from putrid steams, or exhalations of any kind, is noxious to all ani-

mals, and productive of various diseases which frequently prove fatal.

It would be needless to enter here into an inquiry concerning the properties of air, as every one, from his own experience, must have observed, at some time or other, the great difference arising from his breathing in a foul or in a fresh air ; it will be sufficient to observe, that air is the chief instrument of health, and principle of life, without which no animal can subsist. It is likewise necessary to observe, that there is a peculiar matter thrown from the lungs of every animal, together with the air, which renders it unfit for respiration or breathing. Besides, particular situations and seasons often alter the qualities of the air, and render it more or less unfavourable to animal life. Nature, accordingly, makes use of all possible ways to preserve the air in a wholesome state ; for it is thinned and purified by heat, and kept in continual motion by the winds.

Although the air is by such means often preserved in a wholesome state, yet, as has been before observed, particular situations and seasons often alter its qualities, so as to render it more or less hurtful. Its dryness produces one set of diseases, its moisture another ; its heat or its cold others ; and so on. It is well known, that no animal can exist long in the same individual quantity of air.

Thus, it is computed that a gallon of air is rendered unfit for respiration by the steams of a man's breath in one minute ; consequently a hogthead of air would not supply a human creature one hour ; nor, indeed, can he live in it one third of that time. Hence, therefore, we may learn, that, without a continual supply of fresh air, the lungs cannot perform their office. This will appear still more necessary, when it is

considered that the lungs are supposed to be the chief instrument of sanguification, and mixing the blood and chyle by their expansion and dilatation, &c.

Dr. Hales, to whom the world is much indebted for his curious and useful experiments on air, tells us, that he could not live half a minute without uneasiness in seventy-four cubical inches of air, and not one minute in the same quantity, without danger of suffocation.

If the quantity of air above mentioned is rendered unfit for respiration by a man's breathing in it for so short a time, we may conclude that a much greater quantity of air would be rendered unfit for respiration in the same time by a horse, whose lungs are considerably larger, and of a more extensive surface.

The effluvia from animal bodies are likewise very hurtful to the air. Three thousand men, living within the compass of one acre of ground, would make an atmosphere of their own steams seventy feet high, which would soon become pestilential, if it were not dispersed by the winds. The air of prisons, for this reason, produces mortal fevers, &c.

Moist air relaxes all animal fibres. Such diseases, therefore, as proceed from laxity of fibres, must be the common diseases, both of moist seasons and moist situations. Dry air, by producing opposite effects, produces opposite diseases.

Cold air, by bracing the fibres, and giving them a stimulus, produces that strength and activity of which we are so sensible in frosty weather. Hot air, likewise, relaxes the fibres so as to occasion that faintness and debility so often experienced in hot weather.

Those stables, which contain a great number of horses, are attended with other disadvantages,

beside those I have already mentioned, especially to tired or fatigued horses, from the great intercourse which must unavoidably happen in people going out and in, especially in public stables. Hence those horses that are shy to lie down, or are easily disturbed, will not rest themselves in that horizontal posture, which is of great consequence for keeping their legs fine and clean, as it forwards the circulation of the blood, &c. in the vessels, and prevents swelling and gourdiness of the legs and heels, which are generally the forerunners of ulcers, scabs, greese, &c. Rest, to horses that are tired and fatigued, becomes absolutely necessary, in order to recruit and refresh nature. We know how agreeable and necessary it is to ourselves. Horses are susceptible of the same sensations : therefore, every opportunity of resting and stretching their legs should be given them.

Large crowded stables contribute greatly to communicate contagious or infectious diseases. A great number of horses breathing in one place contaminates the air ; and, if it has not a free current, it soon becomes unwholesome, and, like the air of jails, it contracts a malignant quality, which produces fevers in those horses who stand in them ; and, on changing them to other stables, they likewise communicate the infection to others. Hence it has been remarked, in those epidemical diseases amongst horses which have appeared in Britain, that it raged with most violence in those stables where a great number of horses were confined together in one large stable, whilst its effects, in small well aired stables, was more mild and less destructive.

To enumerate all the disadvantages which arise to horses, from their being kept too warm, and breathing a hot foul moist air in close sta-

bles, would take up too much of the reader's time, or perhaps weary his patience, as the impropriety of this treatment to horses, must be obvious to every one, who allows himself to reflect coolly upon the subject, and to apply these reflections to what he has experienced from his own feelings in the like situations. I shall therefore only add further, that it renders horses exceedingly delicate : it enervates their whole system, and, of course, renders them unfit for the laborious exercises required of them.

On the other hand, too cold stables are likewise hurtful to horses, more especially after labour or exercise, or when they are kept standing fixed to one place, or where the cold air is directed upon them in a current or stream from any door or window. A current of cold air is more noxious to animals that stand in it but for a short time, than heat. The natural qualities of the former is one of the principal causes of the distempers it produces ; for its coldness checks perspiration, by contracting the skin, and closing or shutting up the pores.

It is a common saying among stable people, that horses feed best when kept in darkness. But this is by no means the case. They feed equally well in light, are fond of it, and show evident symptoms of pleasure, when they are brought from a dark stable into the light, by their frisking, &c. Such stables are generally unwholesome ; for, as they have no windows, fresh air is excluded as well as light.

Very dark stables are likewise hurtful to the eyes. Horses are naturally timorous, more especially when they see but imperfectly around them. Hence they are the more constantly upon their guard. By this means the pupils of the eyes are too much dilated, or opened, in search



of the least ray of light, in order to discover objects near them. This constant dilatation of the pupils greatly weakens their contractile power ; and, when the horse is brought out to the open day, the rays of light fall so suddenly, and so strong, upon his eyes, as to cause a kind of quivering or convulsive motion in them, and in the eye-lids ; the immediate efforts of the poor animal to keep out those rays of light which give him so much pain, and that, at other times, is so very agreeable to him. But this is not the only bad effect that arises to horses from their standing in dark stables. It affects their seeing objects distinctly when abroad, and causes them to startle, and be alarmed at every thing they meet with, which makes them exceedingly troublesome to the riders. The poor animals are blamed, when, in fact, it is in a great measure owing to the dismal situation in which they are too constantly kept. Light, to horses, is as cheering, agreeable, and natural, as it is to the human species ; therefore, they ought not to be denied that common privilege.

Farmers, from a view of making dung, lay great quantities of straw under their horses, where they sometimes let it remain for weeks together. The dung, urine, together with the heat of the stable, soon reduce it to a state of putrefaction, from which issue steams of a most noxious quality, which the horses constantly breathe in ; and, in wet weather, when they are more confined to the stable, this hot foul air may occasion fevers of the most malignant kind ; and, perhaps, this may be the cause of those epidemical fevers which break out in rainy seasons.

In my Observations upon the Shoeing of Horses and the Diseases of their Feet, I have frequently hinted at the bad effects of keeping their

Hoofs and legs too hot, by means of too great a quantity of litter at all times, night and day, and perhaps large quantities of heated dung. The great heat of the stable, together with the accumulated heat arising from too great a quantity of litter about the legs, occasion a more than ordinary derivation of blood to the legs, &c. which causes a dilatation, or fullness of the blood-vessels, and, of course, a swelling or gour-diness in the legs. Hence proceed a stiffness and numbness, greasy heels, &c. If the horse lies down for relief, the great heat of the litter soon forces him to get up again; and, after repeatedly lying down, and being forced to get up immediately, from the above cause, he attempts it no farther, but stands upright, or perhaps a little straddling, often shifting the weight of his body from one leg to another. This erect position, in which he is obliged to stand, increases the swelling of his legs, &c. Recourse is then had to all the remedies commonly prescribed for swelled heels, under the notion of carrying off humours, as bleeding, rowels, purging, diuretics, &c. &c.

I have been the more particular in the above description, as many cases have occurred, arising from the above cause, when no disease did at first actually exist, and which might have easily been prevented, by removing the quantity of litter as soon as the horse's legs began to swell, keeping them cool, and washing them frequently with cold water.

The Earl of Pembroke, in his Military Equitation, has a very judicious remark on this head. "After working, (says he), and at night of course, as also in lamenesses, and sicknesses, it is good for horses to stand on litter; it also promotes staling, &c. At other times, it is a bad custom; the constant use of it heats and

“ makes the feet tender, and causes swelled legs.  
 “ Moreover, it renders the animal delicate.  
 “ Swelled legs may frequently be reduced to  
 “ their proper natural size, by taking away the  
 “ litter only, which, in some stables, where ig-  
 “ norant grooms and farriers, govern, would be  
 “ a great saving of physic and bleeding, besides  
 “ straw. I have seen, by repeated experiments,  
 “ legs swell and unswell, by leaving litter, or  
 “ taking it away, like mercury in a weather-  
 “ glass.”

The Arabians \*, who are remarkably careful  
 in the management of their horses, and have  
 them in the greatest perfection, litter them with  
 their own dung, dried in the sun, and afterwards  
 beat down to a powder, and spread thinly upon  
 the floor, about four or five inches thick ; and,  
 after being soiled, it is dried a second time in the  
 sun, which clears it entirely of its offensive  
 odour ; and, in order to keep their legs cool,  
 wash them carefully with cold water morning  
 and evening. This practice has not only the  
 desired effect on the legs, but it keeps their hoofs  
 cool and moist in that dry and warm climate.

The same author likewise tells us, that the  
 Arabians keep their horses, as much as possible,  
 in the open air. “ Every day, (says he), from  
 “ morning to night, all the Arabian horses  
 “ stand saddled at the tent doors ; and, as the  
 “ Arabians live in tents, these tents serve them  
 “ likewise for stables.”

This method of managing horses approaches,  
 as near as it is possible, to the natural or  
 wild state, and cannot fail of being attended  
 with salutary effects to the constitution of this  
 useful animal : and, although this practice can-  
 not be adopted or recommended in our cold and

\* Buffon's Natural History of the Horse.

changeable climate, yet the inference is very obvious, and cannot fail of showing the propriety and usefulness of keeping our horses in well aired ventilated stables.

The above author likewise observes “ That  
“ very warm climates, it would appear, are de-  
“ structive to horses ; and, when they are trans-  
“ ported from a mild climate to a very warm  
“ one, the species degenerate.” This observa-  
tion, together with the arguments produced in  
support of it, and which appear to be founded  
in fact, shows how pernicious and unnatural too  
hot stables are to the constitutions of horses.  
Stables, with double heads, as they are called,  
that is, when the horses stand with their tails  
opposite to one another, are very improper, un-  
less there is a considerable open space behind  
them, as horses are apt to kick and fight, by  
which they lame and wound one another ; in-  
stances of which occur almost every day : a pre-  
caution of this kind is the more necessary, as ma-  
ny, if not most horses, when not feeding, stand  
as far back as the stalk of their collar will admit.  
This practice I have observed to prevail mostly in  
those stables that were kept too hot, probably  
owing to a foul hot air prevailing near the rack  
and manger, or from putrid steams arising from  
old musty litter below the manger, or from that  
under the horses fore feet ; for it is to be ob-  
served, that horses and geldings, when they stale,  
throw their urine considerably forward, and if  
the wet litter is allowed to remain under them,  
(which indeed is too frequently the case) it heats  
like a dunghill. The saline steams arising from  
it are so sharp and disagreeable to the organs of  
smelling, that horses stand as far back as they can,

in order to avoid the smell, and to breathe a freer and fresher air.

From what has been said, it is obvious, that the prevailing custom of keeping horses too warm in their stables, and where at the same time, a hot foul air must of course prevail, cannot fail of being attended with bad consequences to their health, &c. and shows the necessity of accommodating them properly with well aired stables, free from all damp or foul air, and so contrived as to be kept at all seasons of a proper temperature, avoiding the extremes of heat and cold.

It is well known, that in hot-houses, where exotic and other delicate plants are kept, a thermometer is used to ascertain the heat of the air within the house, which becomes absolutely necessary, as an excess of heat or cold would injure the plants. This practice, with great propriety, might be adopted in stables, that, when the heat within them is increased to a certain degree, the ventilators should then be opened; and when too cold, they may be shut, or nearly so, as may be found necessary.

All stables should be built in a dry situation, and in a free air. They ought to be at a distance from all boggy or marshy grounds, and free from all noise or disturbance. The ceiling or roof should be high and lofty, as the heated foul air always ascends. The dung should never be allowed to rot within the stable, (as is done in some places,) nor even at the stable door; but every thing about horses should be kept sweet and clean. The stables should be frequently well aired, by keeping the doors and windows open when the horses are out through the day. Experience teaches us how agreeable and even necessary it is to admit fresh air into our own apartments, it is equally necessary and useful

o horses. No stable should contain more than six or eight horses at most, for the reasons already mentioned. The stalls should be large and roomy, at least six feet wide, in order that a horse may stretch his legs out when he lies down with freedom ; and as horses are sociable creatures, and always thrive best in company with one another, no stable should be made of one stall only, unless it may be so situated as the horse that stands in it may be within the hearing of other horses. The stable-windows should be large, in order to admit a good deal of light, and made so as to let down from the top occasionally for the admission of fresh air. The damp or moisture that settles on the glass-windows should be frequently wiped away, and kept clean and dry. The litter under the horses should always be put up through the day below the manger, especially when a horse goes abroad, in order to let the pavement dry and cool ; and when the litter is spread down, it ought never to be too thick for the reasons already mentioned. A horse should never be allowed to stand on litter through the day unless he is unwell or fatigued, when it is presumed he will lie down to rest himself.

Having already hinted, that too much clothing to horses, whilst they stand in the stable, contributes greatly to render them tender and delicate, besides exposing them to all the diseases arising from too great heat about their bodies, and likewise to those arising from an obstructed perspiration from cold when they go abroad. It will be proper here to observe, that in some cases clothing becomes highly necessary. What I condemn is the too constant and improper use of them, even to excess, in warm weather and in warm stables. When a horse is in health, and



stands idle, very little clothing is necessary: a single sheet or rug will be sufficient, unless the stable he stands in is very cold. But when a horse has been overheated, from violent labour or exercise, more clothing will be at that time necessary, as circumstances may require, till he becomes moderately cool.

Here I cannot help taking notice of that pernicious custom of girding horses bodies so very tight above their clothing, by means of very broad girths or rollers, having a considerable number of straps and buckles, with a view of taking up the horses belly (as the phrase is). If such bandages are necessary, of which I have great doubt, why are they used indiscriminately to all horses, and even to those that are naturally light bellied? Post and road horses, when they are fed for some time with clean dry food, have as light bellies as the finest hunters or racers; and yet no such thing as broad rollers are ever applied to them.

Broad girths, when drawn too tight round the body, impede the free action of the lungs, and, by their compressing the liver and other viscera, the circulation of the blood, &c. in them is considerably affected. I have seen many horses, when labouring under a feverish disorder, girded so tight with these broad rollers, that it occasioned a more than ordinary difficulty of breathing, attended with great anxiety and restlessness: and on ungirding the rollers, the animal seemed greatly relieved. For the same reason, too great a number of girths to a saddle are hurtful, when too good ones will answer the same purpose.

## C H A P. II.

## O F F O O D.

**I**T is not to be expected that I should here enter into a minute detail on the different methods of feeding horses for different purposes, or in particular situations. It may suffice to lay before the reader the different qualities of fodder and grain that is used for horses, and to point out the effects they produce on the body, and the consequences that follow upon an improper use of them, by giving them in too great a quantity at one time; likewise the consequences that follow from the opposite extreme, in feeding horses too low, in proportion to the labour or exercise they are employed in, and to conclude the chapter with some general remarks.

Hay is the principal fodder used for horses in Britain. Although there are a great number of herbs and grasses mixed with it, yet they are all included under the general denomination of hay. The common distinction that is made, is that of natural or meadow hay, and the sown or ryegrass hay. The natural hay is generally used in the southern parts of Britain. From the method observed in making of it, and allowing it to heat, to a certain degree, in the rick or stack, it acquires an uncommon smell, something like that of malt dried on the kiln. This practice likewise gives it a sweetishness to the taste, and which is called *mow-burnt hay*. This sweet taste tempts horses to eat greedily of it; and, as it is of a soft quality, they swallow large mouthfuls, without chewing it properly. This produces thirst, and causes them to drink a great deal of water. This quantity of gross fodder, together

with the water, considerably increases the bulk of the stomach, which, in this state, compresses the lungs, the diaphragm, and other viscera surrounding it, to an uncommon degree. If a horse is then put to any exercise that requires activity or expedition, he is in danger of becoming what is called *broken winded*; for it is always observed that this disorder may be traced from too sharp exercise performed when the stomach is full. I have likewise observed a greater number of broken winded horses where this kind of hay is used, than in those parts where rye-grass is the common fodder.

Mr. Gibson, in his treatise on the Feeding of Horses, condemns the use of rye-grass as a proper fodder. He says, "That, in England, it is seldom given but in the months of August and September, except to horned cattle. Before Michaelmas it is tolerably *hard* and dry, especially in dry seasons; and many feed their working horses with it, mixed with dry clover; but afterwards it imbibes so much moisture, that it becomes unwholesome, and few horses that have been used to good hay will care for it." Here I must beg leave to differ from Mr. Gibson. For, in this country, where rye-grass mixed with a little clover is much used, it is found to be a clean wholesome fodder for horses; and those that are constantly fed upon it are not so subject to be broken winded as those horses that are fed with natural mow-burnt hay; and, at the same time, they perform the exercises required of them with strength and vigour. Mr. Gibson, in the same page, says, that "soft hay, of all others, imbibes moisture the easiest, and retains the effects of it the longest, which generally turns it rotten and unwholesome, and so affords but a crude faint nourishment; and those horses that are forced to feed

upon it, for want of better, are generally weak and faint, and in time grow diseased, if they continue long in the use of it."

Now, it is well known that natural hay is considerably softer than rye-grass hay, and, of course, more liable to attract moisture, and acquire all the bad qualities he mentions; whereas rye-grass hay, being harder and firmer in its texture, will not so readily imbibe moisture; and, from his reasoning, it should be the wholesomest fodder for horses. Another recommendation in its favour is, that, being harder and firmer than natural hay, it obliges a horse to break it down more minutely before he can swallow it, which makes it lighter and easier of digestion, less bulky in the stomach, and, of course, not so liable to produce the effect I have formerly mentioned.

Upon the whole, I would observe, that whatever be the quality of hay, much depends upon its being well got in; for the best grass that ever was cut for this purpose may be spoiled by wet weather, or by bad management, in the winning and getting it in; and, where there is a choice, the best should always be given to horses that are employed in active exercises.

Clover-hay should only be given to cattle and draught horses, whose labour is slow and equal. It cannot be recommended as a proper fodder for horses that stand much at rest, nor to those who are used in violent exercise of any kind, as they are apt to over-feed upon it.

Wheat-straw is generally used as litter. It is seldom given as fodder, unless to draught-horses, or when it is chopt or cut small, and mixed with oats, &c. in order to oblige horses to break their food thoroughly, before they can swallow it. Yet the highest fed horses, when it is fresh laid before them, are not only fond of picking

the unthreshed heads of wheat that remain on the straw, but are likewise fond of the straw itself by way of a change.

Barley and oat-straw are the common fodder of cattle and farm-horses. They are seldom given to the better kind of horses, unless it be out of œconomy, or by way of amusement, when they are standing idle in the stable, to prevent them from being restless for want of other food.

Pease and bean-straw are a dangerous fodder to horses that are not brought up, or gradually accustomed to it, as it is hard of digestion. It is likewise apt to produce flatulencies, attended with griping pains, and obstructions in the bowels. It is commonly given to work-horses and cattle.

New hay of any kind should not be given to horses, more especially to those who are employed in active exercises, as they feed upon it too greedily, and swallow it without chewing it properly. It overloads the stomach, and, at the same time, produces a crude watery chyle, which disposes the horses to sweat much, which weakens them greatly; therefore, it should never be given till the superfluous moisture it contains is dried up, which will require some months after it is got in. But to such horses as are employed in very active exercises, it should at least be eight or ten months old.

Grass is the most natural food for horses; but, whether it proceeds from the coldness of the soil or climate in Britain, it does not produce such rich nourishment as to enable them to perform any active exercises with the same strength and vigour as in warmer climates, without the addition of grain, as oats, &c. When horses are allowed to run abroad, and have a sufficiency of oats, and, at the same time, are provided with pro-

per shades to protect them from the inclemency of the weather, we find from experience, that they thrive, and perform any active labour, as well as those horses that are kept in stables on dry food only; together with this advantage, that they are not so subject to diseases, nor to lameness, but what in the latter case, may proceed from accidents among themselves.

Grass is not only food, but it is likewise physic, to horses—I mean the early or spring grass. Where the viscera are sound, it cures most of the diseases they are subject to, with more certainty and expedition than can be done by medicine. After a long course of dry feeding and hard labour, it restores the constitution to the highest health and strength. It cleanses the bowels, and carries off those chalky concretions that are apt to be produced in the stomach of such horses as have been long used to dry hard feeding. It likewise carries off the different species of worms with which they are infested. It renovates, as it were, the whole mass of fluids in the body. It promotes all the secretions, and removes glandular obstructions; and, in many cases, it carries off stiffness in the joints, and other lameness; and, upon the whole, it restores the body to the highest state of perfection of which it is capable.

But the advantages I have now mentioned that arise to horses from their being out on the spring grass, are in a great measure lost to them: if they are allowed to continue through the summer, when the grass becomes too rank, they then become fat and corpulent; for I would always have it understood that a fat corpulent horse is by no means fit for active exercises of any kind, neither can he go through them without danger to his health and soundness: for this reason, it is customary,



when horses are too fat, and full of flesh and blood, to reduce them to a proper state, by evacuations, as bleeding, purging, &c. which, when too frequently repeated, impair their constitutions, and bring on a premature old age.

If those horses that are intended for hunting, &c. were taken up from grass as soon as it begins to shoot, and kept in constant daily exercise, although fed with a very moderate allowance of oats at the time, as the hunting season approaches, both their feeding and exercise may be gradually increased. They will become, by this management, in a proper condition for the severest exercises, without purging or evacuating medicines of any kind. But this will be more fully illustrated under the article of Purging.

It has been observed above, that grass dissolves those chalky and other concretions that are apt to grow in the stomach and other viscera of horses. Van Swieten, in his Commentaries upon the Aphorisms of Dr. Boerhaave, vol. 9. p. 177. when treating of chalky matter found in the liver, &c. says, "Sometimes there are concretions of the like sort found in this organ, but of a more friable texture, and of a whiter appearance, like gypsum or plaister of Paris. Such incrustations were often observed by *Glisson* in the *pori bilarii*, and its larger branches, dispersed through the livers of oxen that had been fed in stalls with hay and straw, during the winter season, and without exercise. But then these concretions are very friable; and they afterwards dissolve again, and pass out of the body, when the cattle come to feed upon the fresh grass of the meadows; for, in oxen that are slain in the spring and summer, they are very rarely to be found."

In dissecting horses, I have frequently met with chalky concretions in their livers and in the lungs,

especially in those that have been fed long on dry food, and likewise round balls in their stomachs, sometimes of an oval shape. The latter seem, for the most part, to be composed of the dust they lick from their own bodies mixed with the hair. Whether the fresh grass dissolves them is not so certain; but that it causes these concretions to pass through the intestines, I have had a full demonstration. In May 1786, a horse that had been long fed on dry food was turned out to grass; in about eight or ten days afterwards, he was seized with violent griping pains, which lasted about twenty-four hours, when he died. As the horse was very fat, the man who had the charge of him wanted to make something of his grease: in searching for it, he observed a large portion of the intestines of a very black colour; and on feeling it, found something hard and weighty. He immediately cut the intestine open with his knife, and took out a large oval hard ball, which measured four inches in length, and three inches and a half in breadth; and which I have now in my possession. That this concretion was originally formed in the stomach, there can be no doubt, as they frequently, upon dissection, have been found there; and nothing but its great bulk had hindered it from passing through the intestines.

The author I have just quoted, in the same volume, page 184, mentions another very salutary effect of grass, in curing a man of a most obstinate jaundice. He says, "Some years past, I had the care of a poor man, who was obliged to maintain himself and a family by his day labour, and therefore unable to support the expence of a course of medicine; but, having good spirits, and a great desire to be relieved of his malady, by promising him a cure, I easily persuaded him to live

altogether upon grass. He boiled a large quantity of grass in pure water ; and after sweetening the decoction with honey, made use of it for his common drink ; and the tenderest grass sprouting in the spring season, or rising up again after the first mowing, he boiled in fresh broths, and made it entirely his food. He confessed, indeed, that for some time in the beginning of this course, his diet did but little please him ; he could afterwards eat it without any kind of disgust, and therefore used it for two whole years, except for some parts of the months in the winter time. He assured me, that he could easily distinguish the best pasturage by the flavour of the grass, and that he was obliged secretly to cut out his diet from the meadows ; since the farmers, finding him to have so large an appetite, often gave him forcible repulses. By this course only, he was perfectly cured of a most obstinate jaundice, in which even his saliva began to taste bitter ; and I saw him some years afterwards in a good state of health."

From what has been now observed, with respect to the properties of the early or spring grass, it will be obvious how necessary it is to the health of horses to let them have it as early in the spring as circumstances will admit ; and those horses that cannot be turned out to pasture, should have it in the house as soon as it will cut. How many of the best horses in Britain fall a sacrifice to the most loathsome diseases, by keeping them, for years together, upon hard dry food, without ever tasting green herbage of any kind ; yet many people, ignorant of the advantages that arise to horses from the use of the early spring grass, think it a recommendation, and boast of their horses not having had any for such and such a length of time, or that such a horse (as the phrase

is) has so many years *hard meat in his belly*: for my own part, so far is it from being a recommendation, that, on the contrary, I look on the situation of such horses as tending towards the most fatal diseases; and experience has confirmed the observation.

This practice of feeding horses for years together on hard dry food, does not prevail so much in this part of the kingdom; but in the more southern parts it is very common: and this I am convinced is one cause why that loathsome disease the *farcy* prevails more in the latter than in the former. We know that sailors, and others who are confined for a length of time to live constantly on dry food, and that which is salted, are very subject to the scurvy: we likewise know what great advantages they reap from fresh greens and ripe fruits, in recovering them from this loathsome disease. It is the same with horses who are fed long on dry hard food; they are likewise subject to the scurvy, which in them is called the *farcy*.

Perhaps it may be said, that horses who are kept for active exercises, reap no advantage from their being fed with oats, &c. whilst they are on grass; because the purging that is brought on by feeding on the grass will carry off the nourishment that should be produced from the oats, &c. In answer to which, I would observe, that although the early grass purges a horse gently at first feeding on it, yet this purging does not continue long, neither is it attended with that weakness, faintness, and loss of flesh, which is observed in those horses who are purged by strong medicines, where the evacuation is brought on suddenly, and perhaps to an excess; for, neither the human nor animal body can support sudden evacuations of the latter kind, without a weakness and faintness

ensuing, although they can bear a little laxity from diet without any inconvenience.

A change of diet is not only agreeable, but it is wholesome for horses, as it contributes to keep them open in the body. Malt, mixed occasionally with their food, proves a medicine.

Wheat, notwithstanding it affords the most nourishment, is seldom given to horses, probably owing to its price being higher than that of other grain. It is apt to purge horses a little on the first using of it; they eat it greedily, and are fond of it; but, as it becomes very slippery from the moisture in the mouth, it is swallowed whole, and passed through the body in that state; but, when it is given bruised, or mixed with chopped straw, the horse is obliged to break it minutely with his teeth before he can swallow it. It then proves very nourishing, and enables them to go through their labour with strength and vigour: it likewise makes horses coat well, that is, it makes their hair lie smooth and shining.

Lord Kaimes, in his Treatise on Agriculture, has been at great pains to ascertain the weight of the different kinds of grain; from which may be inferred the quantity of nourishment each kind produces. By his calculation, the boll of middling wheat weighs 14 stone Dutch weight; the husks weigh two stone; for which reason, when wheat is given to horses, a less quantity will be necessary than of oats.

Barley likewise purges horses on the first using of it; but, when it is given mixed with cut straw, for the purpose already mentioned, it proves a wholesome nourishing diet: it is the principal food of the Arabian, the Barbary, and other eastern horses, who undergo great fatigue, and perform journies with incredible swiftness. Yet I have been informed, by a very ingenious gen-

tleman, who resided several years in England, that farmers, grooms, &c. are much prejudiced against feeding their horses with barley, as they alledge that it gives them the itch. But I can affirm, from my own experience, that it has a very opposite effect; and that if horses, who are troubled with this disorder, are fed on barley, either raw or boiled, it will contribute greatly towards the cure. The boll of middling barley weighs 18 stone Dutch weight; the husks one stone four pound. When it is boiled, it proves light, and easy of digestion; for which reason, it is frequently given to horses when they are sick, or to prevent costiveness.

Oats, notwithstanding they are reckoned more heating and binding than any of the former grain, yet they are generally given to horses in Britain. To post and other carriage-horses they are frequently given, mixed with beans, which obliges them to break both oats and beans minutely before they can be swallowed. The adding of the beans makes this feeding very nourishing. On that account, beans should never be given mixed with oats to those horses that stand much at rest, or have not sufficient exercise. The boll of middling oats weighs 14 stone Dutch weight; the husks weigh six stones. Therefore, as oats have more husks than any other grain, a greater quantity is necessary. For this reason, it is probable that the standard measure of oats is larger than that of other grain. The constant feeding with oats, although it is esteemed what is called clean feeding, yet it is apt to make horses too costive, &c. to prevent which, bran, mathed up with boiling water, is given once a week, or as circumstances may require.

Beans are seldom or never given to horses by themselves, unless to work-horses. When they



are boiled, they afford the strongest nourishment of all the other grain. The boll of middling beans weighs fifteen stone eight pound; the husks weigh eight pound; which is the smallest proportion of husks in all the grain now mentioned. Of course they contain more nourishment; but, as they contain a great proportion of fixed air, when given in a raw state and in too great a quantity, they are found to produce flatulencies, gripes, &c.

Having thus endeavoured to lay before the reader the different properties of fodder and grain, &c. used in the feeding of horses, it now remains to consider how they are or ought to be applied, in such a manner as may be of greatest benefit to their health, &c.

It has already been observed, that the food of horses, in their natural state is exceedingly simple, consisting chiefly of herbage, as grass of different kinds, and water for drink. These afford nourishment sufficient to keep them in flesh and strength, whilst they have nothing to do but range the fields at large; but, in a domestic state, where they are put to hard labour, and violent exercise, food of a more generous nature becomes necessary, to strengthen and enable them to perform the various exercises required of them.

The food that is commonly used for horses in Great Britain consists of hay, oats, beans, barley, and bran. The latter of these is commonly given to horses when sick, boiled, or made into a mash, with warm water, in order to keep them open in the belly, when they seem to be costive, which happens frequently to horses when kept long on dry food, even in the best state of health. But oats and beans are given to those horses who perform hard labour, or active exercises, as they are

found to produce the best and the strongest nourishment in this country.

It will perhaps be not only entertaining but instructive, for many of my readers, to be informed how horses are fed in different countries, and what incredible fatigue they will undergo, upon a very small allowance. The Count de Buffon, Vol. III. page 375. tells us, "That the Tartar horses will travel two or three days without stopping; receiving, for four or five days on end, only a handful of herbage every eight hours; and, at the same time, kept from drinking for twenty-four hours." And, in the same volume, page 369. he says, "That the Arabian horses are rather meagre than fat. During the day they are not permitted to eat, but are watered twice or thrice. At sun-set, a bag, containing about half a bushel of barley, is passed over their heads, and fastened to their necks. This bag is not removed till next morning, when the barley is entirely consumed. When the grass is good, they are turned out to pasture; and, during the rest of the year, they are allowed neither grass nor hay, and rarely straw, barley being their only food. And great care is taken to give them only as much as is barely necessary; for too much nourishment makes their legs swell, and soon renders them useless." In page 371. of the same volume, the Count de Buffon quotes Pietro della Valle, who prefers the common horses of Persia to the finest Neapolitan horses. He says they are generally of a middle stature; and some of them are very small, but strong and active; while others exceed the size of the English saddle horses. They have light heads and fine necks. Their ears are handsome and well situated. They have slender legs, fine cruppers, and hard hoofs. They are docile, spirited, bold, and capable of enduring great fatigue. They are extremely swift, and never stumble. They are robust, and so ea-

fily nourished, that their only food is barley, mixed with cut straw; and they are grazed during six weeks of the spring only.

In page 372, Buffon tells us, that "the horses which are bred in the Indies are very indifferent. Those used by the great men of the country are brought from Persia and Arabia. They are fed with hay during the day; and, at night, in place of barley and oats, they get pease boiled with sugar and butter. This nourishing diet supports them, and gives them some degree of strength; without it, they would soon perish, the climate not being adapted to their constitution."

Mr. Berringer, in his excellent Treatise on Horsemanship, vol. I. page 134. quotes a passage from Cambridge's Introduction to his Account of the War in India, where he says, "That the Indians feed their horses in the rice-fields; and, when flesh is plenty, they boil the offal to rags, and, mixing it with butter, and some sorts of grain, make balls, which they thrust down the horses throats. In scarcity of provision, they give them *opium*, which has the same effects both on horses and men; for it at once damps their appetites, and enables them to endure fatigue."

The Count de Buffon likewise tells us, in vol. iii. page 388. "That, in Iceland, where the cold is excessive, and where often no other food can be had than dried fishes, the horses, though small, are extremely vigorous."

Pontoppidan\*, in his Natural History of Norway, says, that, in the year 1302, a man, whose name was *Huleickson*, was the first who gave his horses oats in that country, whence he had the nickname of *horse-corn*.

Quod in Norvegia primus equos avena paverit.

The horses here are not subject to so many dis-

\* Berringer, vol. i. page 147.

cases as in most other countries, and in particular the stagers.

In Britain, it was formerly the custom to give horses baked bread, known by the name of *horse-bread*, instead of oats, and other grain.

“The Arabian horses intended for hunting in Arabia or Barbary, seldom eat herbage or grain. Their common food, which consists of dates and camel’s milk, is given them every morning, and at night. These aliments, instead of fattening them, render them meagre, nervous, and very fleet. They spontaneously suck the she-camels, whom they follow till the time they are ready for mounting, which is not before the age of six or seven years.”

Berringer, in his *Horsemanship*, tells us, that “*Nemesian* recommends straw and barley as very nourishing diet; and it certainly conduces very much to keep horses in health, spirits and wind, and in a state of body fit for any kind of labour, as it supports and strengthens, without rendering the animal heavy and corpulent. The ancients, likewise on certain occasions, gave their horses wine to drink, to animate and refresh them.

“The Kalmuck horses are so hardy and strong in their constitution, as to be able to run three or four hundred English miles in three days. They subsist, summer and winter, solely upon grass in the great deserts.”

To illustrate what may be farther advanced, it will be necessary to premise some remarks relating to the animal œconomy in converting the food into nourishment, and its mixing with the blood.

The food that is taken in at the mouth must undergo a preparation in the stomach, before it can be assimilated, or mixed properly with the humours of the body, so as to be converted into nourishment. Thus, whilst the food is chewing

or grinding between the teeth, it is mixed with the saliva, which is separated from the glands of the mouth and jaws; and, when sufficiently broken down, it is swallowed, and taken into the stomach, and there mixed with other juices, where it undergoes certain changes, and produces a milky liquor, called chyle.

This chyle is conveyed out at the same orifice of the stomach, along with the grosser part of the food, into the small guts, where it is absorbed, or taken up by the lacteal vessels, whose mouths open in almost every point of the intestines, and by them is conveyed into its proper receptacle, and from thence into the mass of blood. The grosser parts of the food, by the peristaltic or wormlike motion of the intestines, are carried backwards, and voided, in the form of excrement or dung, but not before it is drained of all the chyle it contains in the larger intestines.

The chyle being thus mixed with the blood, is first carried, by the force of the heart, into the lungs, where it is said to undergo certain changes, in order to fit it for circulation and nutrition, &c. Being acted upon by the vessels of the lungs, and at last those of the whole body, it becomes intimately blended with, and acquires the nature of blood.

The chyle that is formed from the food taken into the stomach, partakes of the nature of the food that is eat, which notwithstanding the digestive faculty, is capable of forming chyle of different aliments: yet, as I have already observed, some kinds of food will produce a stronger and a more nourishing chyle than others, as oats, beans, &c. which like wines taken in moderation to the human body, excite an activity in all the members, and diffuse a certain cheerfulness and vigour through the whole system. Thus, horses

taken from a low moist diet, and fed with oats, &c. soon turn wanton and frolicksome : hence, likewise, those horses that are employed in very hard labour are fed with such nourishing diet, to enable them to perform it with vigour. This kind of high feeding keeps them as it were in a constant state of inebriation ; and from this we can account why a horse that (as the phrase is) *has good meat in his belly*, will perform any violent labour or exercise for a longer time, and much better, and with greater ease to himself, than he would do if he was fed upon more simple and less nourishing diet. Hence, likewise, it will be obvious, from the same parity of reasoning, that, from a defect in the quantity or quality of the food, the body cannot be sufficiently nourished, and, of course, the animal will become weak and feeble.

The blood being thus constantly supplied with fresh chyle, and conveyed to every part of the body by the force of the heart, nourishes the different parts, and supplies the waste that has preceded in the body.

The effects of nourishing food upon a lean horse, or on those that are not accustomed to a rich diet, provided they are otherwise in health, are very soon visible ; it changes the whole system, by the alteration it produces in the fluids. The fluids being enriched, act likewise upon the muscular fibres of their containing vessels, and stimulate them as it were to dispel the watery or serous parts of the blood by sweat on the surface of the body, even when the horse stands at rest in the stable ; and at the same time, it promotes the necessary secretions in the glandular system.

Thus it is observed, that when horses are taken up from grass late in the season, and put on a dry nourishing diet, they sweat much, standing idle



in the stable; they are then said to be *foul in the body*, when, at the same time, this sweating or foulness in the body proceeds, in some measure, from the too great quantity of serous or watery particles contained in the mass of fluids, which, on the change of diet, are thrown off in this manner by the new acquired strength of the muscular fibres of the vessels, compressing their contents more closely, and forcing the serous or watery parts through the fine capillaries or pores of the skin in the form of sweat. This might be farther illustrated, from the effects of purging and diuretic medicines given in these cases, and the success attending them, in removing this symptom of sweating in the stable, &c. and which will be further explained when I come to treat of the operation of these medicines.

Rich feeding, with idleness, produces a superfluity of nourishment. The vessels become turgid and full of blood. The body grows corpulent and fat, and of course unfit for the active motions required of a horse; neither is he able to continue labour or exercise for any length of time, without being fatigued by his own unwieldiness, and, if overheated, not without danger of being attacked by some violent disorder. Labour or exercise increases the circulation of the blood, &c. and, if continued long, or carried to excess, the red blood is forced into vessels in which it does not usually circulate, in an unactive state. The fat is dissolved by the great heat and rapid motion of the fluids, and produces what is called an *oily plethora*. If a fever ensues, which frequently happens in the above case, the fluids are disposed to putrefaction, which, if not timely prevented, proves fatal.

High feeding, when there is not a proportional waste in the constitution, from labour or exercise,

produces a long train of diseases, which the least trifling circumstance may bring forth: for there is no state or habit of body more liable to disease than that of the too fat and full habit, of which we daily see a number of instances.

Dr. Bracken, in his second volume on the article of Feeding horses, says\*, “It is very odd to hear some men talk with relation to the allowance of oats, &c. which a horse should have *per diem*; for a great many imagine they are not necessary for horses that have much rest, or are not travelled long stages: yet I must tell these gentlemen, that they run the hazard of bringing on distempers, if they should have occasion to use their horses upon an expedition, when they are only fed with hay, and a scanty feeding of oats.”

I cannot help dissenting from the Doctor’s opinion, and classing myself amongst the number of those who do not imagine that a great allowance of oats † are necessary for those horses that have much rest, for the reasons I have formerly mentioned. Besides, what the Doctor advances is not only contrary to reason and experience, but the established practice of intelligent sportsmen, who have seen its bad effects in bringing on those very distempers the Doctor alledges they run the hazard of.

I would farther observe, that no man who is acquainted with horses would think of using them on any occasion that required expedition, without previously preparing their bodies for it, by good feeding and regular exercise: for, although a horse was daily allowed as much oats and beans as he could possibly eat, yet that alone would not put him in the condition necessary to perform any labour or exercise where expedition is required.

\* Page 99. † The Doctor generally allows three feeds per day, mixed with beans.

The Doctor, in the same page, relates a case, in order to corroborate what he advances in the passage I have quoted, where he says, "One of my patients having occasion to go to the Bath waters for the recovery of his health, happened to borrow a chariot and pair of geldings from a gentleman in Lancaster, in order to carry him to the stage-coach at Chester. The geldings were large and strong, as well as in good health, and *fat*, but had had too scanty allowances of oats, &c. for their size; three or four quarts a-piece per day, or, as I think, less, as the coachman told me, being the usual stint; which made me caution that they should travel very short stages; because I was afraid he might lose both of them before he got back to Lancaster, not only by reason the weather was hot and surfeiting, but they had not eaten a sufficiency of corn and beans before hand; so that, after they were heated, they would be longer in cooling. In fine, it so fell out, that one of the geldings kicked up his heels at Preston, on his return home." Here I would again beg leave to differ from the Doctor, as it would appear, from the circumstances he relates, that it was the fatness of the horse, together with his not being in the use of performing such violent labour, that was the cause of his death; to which the heat of the weather, and the habit of body he was in, would no doubt contribute. Neither could the horse's death be attributed to his not having eat a certain quantity of oats and beans every day before he began his journey; for, although a horse be ever so well fed, unless he be daily accustomed to labour, or exercise, his flesh will not acquire that rigidity and firmness that is necessary to enable him to perform any exercise that requires expedition, and continued for a length of time, without endangering his health

or his soundness. Thus if a man who is not accustomed to athletic exercises, should be under the necessity of exerting himself in walking, leaping, or running, &c. for a length of time, he will, of course, be over-heated, and perspire plentifully; but, when he cools, he will feel himself stiff and pained all over his body: yet, if he continues these exercises daily, for any length of time, they will not produce these effects to such a degree. The habitual practice of exercise renders the muscles more pliant; the profuse perspiration that takes place in the beginning of these exercises carries off the superfluous fluids; and the remaining mass circulates with more freedom through the lungs. Hence respiration or breathing becomes more free and easy, of course the exercise less fatiguing; and this every man must, in some period of his life, have experienced. It is the same with horses; for, although the animal body is constructed on a larger scale, yet its oeconomy is regulated by the same laws with that of the human body.

If a lean poor horse is allowed to stand idle, and fed plentifully with rich food, he will grow fat, plump, and full of juices. If he is then regularly exercised, or worked hard for a few weeks, he will lose a considerable quantity of his flesh and weight; notwithstanding of which, he will be stronger, and fitter for labour, than when he was fat and plump; because, from the labour and exercise he has undergone, the muscular fibres in general are thereby, as it were, more consolidated. But, let the same horse again stand idle, and be plentifully fed, yet some considerable time will elapse before he become so fat and full, or, in other words, before the muscular fibres acquire their former lax state. Hence it is that horses, when newly taken from the late

grafs, are in this lax habit of body, and sweat much when put to labour or exercise. But, on changing their food to that which is dry, and more nourishing, a richer chyle, and hence better blood, is produced ; which by invigorating the whole system, strengthens the fibres, and enables them to act more powerfully on the fluids, and produces the effects already mentioned. We have a farther proof of this in post and other horses, when they are first set to work, whilst their fibres are in this lax state, as their exercises or labour becomes violent, they breathe with difficulty, and sweat most profusely ; but, by persevering in this exercise, and feeding them with rich dry food, as oats, beans, &c. their muscular fibres acquire a greater degree of rigidity, their flesh becomes firmer, they breathe with freedom, and at length are able to perform the most violent labour or exercise with expedition and ease. In this case, according to the common phrase, they are then said to be *in wind*. I might enlarge farther on this head ; but it would perhaps be a digression too minute for the greater part of ordinary readers ; I shall therefore now proceed to the feeding of horses.

What an eminent physician \* has said, with respect to the diet, &c. in the human body, may be applied with propriety to horses. “ Many of  
 “ of the occasional causes, says he, of diseases do  
 “ certainly arise from our inattention to the rules  
 “ of diet, which are suggested to every man by  
 “ plain common sense, and daily experience.  
 “ From this inattention it is that so many infants  
 “ which at their birth had all the marks of a  
 “ sound constitution, have either died before  
 “ they arrived at maturity, or have with great

\* Dr. Mackittrick, page 209.

“ difficulty attained it, with irretrievably broken  
 “ health : hence also it is that many of the stout-  
 “ est men either shorten their lives by violent dis-  
 “ eases, or languish through the latter part of  
 “ life under all the baneful effects of debauch.”

As horses are not endowed with reason, but guided entirely by instinct to such aliments as correspond with their constitutions, the appetite for food excites in them a strong desire to gratify this sense. They are therefore apt to indulge in it to excess when it is laid before them, especially grain of any kind, and more so, when confined in the stable, where they have no other amusement to divert them from it. For, in the fields at grass, after they are satisfied with eating, they run about, and play with one another a considerable part of their time, and do not begin to eat till prompted to it by hunger. For this reason, there are but few or no instances of horses over-eating themselves when running at grass.

Young horses, in particular, are most liable to be injured by too much feeding with grain. The blood of young animals is naturally disposed to be hot ; high feeding increases this disposition and renders them more subject to inflammatory diseases. Hence high dry feeding with oats, &c. is said *to burn up the body of horses*. This high feeding, likewise, produces a plethoric, or too full habit of body, which renders them more liable to fevers, &c. and to swelled legs and greasy heels, and, upon catching the least cold, to a variety of other disorders.

Besides the ordinary feeding with oats, &c. at stated times, through the day, it is too common to keep the racks at all times filled with hay. Hence many horses stuff themselves too full. They drink a great quantity of water, which eating a deal of hay prompts them to ; and when they



come to be exercised, or even when performing any ordinary labour, they are hardly able to breathe. Numbers of horses are daily ruined from this practice ; yet many people are not aware of its effects. If they reflected, but for a moment, what would be the consequence to themselves, were they obliged, after a full meal, to perform some violent exercises, as running, leaping, &c. they could hardly fail of being convinced of the impropriety of this injudicious treatment to their horses.

It is likewise to be observed, that there are horses of delicate stomachs, who loath their food, from its being too constantly before them, and not having sufficient time or exercise to digest what they have ate. Besides, their constantly breathing upon it taints it so, that they cannot relish it afterwards. It ought likewise to be remembered that it is not the quantity of food alone which a horse eats that produces the wholesomest nourishment, but it is what he digests well, that invigorates and strengthens the constitution ; for, when the stomach is overloaded with food, the body is dull, heavy, oppressed, sluggish, and stupid. It likewise impairs the digestive faculty, and fills the vessels with crude chyle, from which diseases arise ; besides the immediate effects which the great bulk of the stomach, when distended with so much fodder, has upon the lungs, &c. by obstructing their free motion, straining the diaphragm, and producing asthmatic complaints, as broken wind, purfiveness, &c.

Throwing great quantities of clean grain before horses at one time is very improper ; they, in this case, dip their mouths in it with eagerness, by which means they grasp more than they can break down properly ; they devour it greedily, and swallow whole mouthfuls of it almost dry. The mois-

ture in the stomach, or water drunk immediately after eating, causes the grain to swell, by which the stomach is greatly distended, and thereby loses its contractile power to act upon the food. By its uncommon pressure upon the intestines, the passage for the food backwards is obstructed. The confined air, arising from the indigested food not having a ready passage backwards, and horses not possessing the power of eructation or belching, the air, by the heat and confinement, becomes rarified to a great degree, the horse is seized with the most acute pains; as they increase, he becomes convulsed, and in many cases the stomach bursts, and death follows of course. Out of a number of cases where the above was discovered on dissecting the bodies of horses, I shall only mention the two following.

A young draught horse was fed in the morning with two great a quantity of barley mixed with pease, and had been allowed to drink water immediately thereafter. He was yoked to a two wheeled chaise, in order to travel a few miles, and was observed, about the middle of the day, to be very uneasy, frequently attempting to lie down. As soon as he was unyoked, he lay down, and tumbled about, frequently lying on his back, starting up suddenly, and turning his head towards his belly. He continued thus in great agony till towards next morning, when he died. Upon opening his body, the stomach was found burst, the barley and pease mostly entire, only greatly swelled, and the whole contents of the stomach, which were very considerable, spread through the abdomen.

The other case was that of a horse who had been fed with two great a quantity of oats and barley, and had been allowed to drink water freely afterwards. He was seized with griping.

pains, so that he frequently lay down and tumbled, seemingly tortured with the most acute pains. He died next day. Upon opening his body, the stomach was found distended to a most enormous size, but was not burst. Its coats were so very thin, from the great distention it had undergone, that its cohesion was almost destroyed, and had more the appearance of a coat of mucus or slime than the stomach. The oats and barley were for the most part entire as they were swallowed, only greatly swelled, from the moisture they had imbibed.

From what has been now said, it will appear how necessary it is not to allow horses to eat too great a quantity of grain at one time, but to give it in small quantities, and repeating it the more frequently, spreading it carefully in the trough or manger. At the same time, it will show the propriety of mixing with it a little chopped straw or hay, in order to make them chew it more thoroughly before they swallow it. This process likewise prepares the food for being properly digested, and not a single grain of it is lost. The method of feeding horses with bruised grain and chopped straw, as recommended by the Right Honourable the Earl of Pembroke, in his excellent treatise upon horses, is exceedingly proper. "Every grain (says he) goes to nourishment; none is to be found in the dung; and three feeds of it go farther than four, as commonly given, which have not been in the mill. But wheaten straw, and a little hay too sometimes mixed with it, is excellent food. To a quarter of corn put the same quantity of straw. It obliges them to chew their meat, and is many other ways of use."

On the other hand, feeding horses in the opposite extreme, and keeping them on too small allowance of food, when they are worked hard,

also disposes them to many diseases; the horse becomes weak and spiritless, his body is emaciated, the circulation is faint and languid, dropfical swellings appear in different parts of the body, the blood itself loses its colour and glutinous quality, and the animal sinks under a complication of diseases, which are consequent upon an impoverished state of the blood and juices. Hence, therefore, it will appear what care and attention are necessary in the feeding of horses, and how much depends on the conducting it in a proper and regular manner.

Although it is extremely difficult to lay down any fixed rules for the feeding of horses, yet it may be observed in general, that all extremes in the feeding of them ought to be avoided. Those that are constantly employed in hard labour, or active exercises, require to be fed with more grain than those that stand much at rest in the stable, or only perform gentle exercises, which occasion no great waste in the constitution. Upon the whole, the feeding of horses ought at all times to be proportioned to the labour or exercises they are employed in. At the same time, their food, as I have formerly observed, should be given them in smaller quantities, and more frequently repeated, than is commonly done.

It is equally difficult to ascertain the quantity of grain that should be given to a horse in the twenty-four hours, as the measures in different countries differ very much. Post-horses, hunters and others who are employed in such violent exercises, ought to be fed chiefly with grain during the continuance of these hard exercises. The former frequently eat from four to six or more feeds of oats mixed with beans per day of the oat standard measure, which is the largest measure of all other grain. But this high feeding

should not be continued for too great a length of time, without a little relaxation, both from severe labour and high feeding. The latter should be changed occasionally to that which is soft and moist, as boiled barley, malt, or a little fresh grass in the season. This should be continued for a short time only, by way of change of diet. From a due attention to this manner of feeding, horses may be kept fit for any kind of active exercise, without exhausting their constitutions, and endangering their healths, from their being kept too long at one time on dry hard food.

Wheat and barley should likewise be given to horses frequently, by way of a change of diet; and all grain that is given them, if possible, should be bruised in a mill, or otherwise, for the reasons already mentioned; this would not only be a saving of grain, but attended with considerable advantage in other respects. Too new grain of any kind should never be given to horses that are employed in active exercises, as they produce the same effect as new hay; they fill the vessels with crude watery chyle, which disposes horses to sweat much; and hence it weakens them considerably. New grain likewise frequently occasions a severe looseness, which renders horses unfit for the task that may be required of them; or, if the grain, at the same time, chance to be bad of its kind, the diarrhoea continues with such severity, that it proves fatal; of which we have too many instances, although it is not commonly attended to.

I have already hinted, that horses that are fed long on hard dry food are apt to become too costive. This should be particularly attended to, and guarded against, as its consequences are dangerous, not only in causing obstructions in the bowels, but occasioning a stoppage of urine, from

too great a quantity of hardened dung lying in the rectum, and pressing upon the neck of the bladder. This complaint, like most diseases to which horses are liable, is easier prevented than cured, by giving mashies of bran, boiled barley, or malt, once a week, or oftener, if found necessary, by way of prevention.

Out of many cases of this kind which I have known, I shall only mention the following: a horse in this neighbourhood had been neglected in this respect. He was seized with griping pains, and was treated in a very absurd manner, by giving him ardent spirits, aromatic powders, and pepper\*. It was at last discovered that he had not had any passage, either by dung or urine, for some time. After he was racked†, he staled plentifully, but the griping pains still continued. Emollient injections were then proposed, but too late to give him any relief. Upon opening his body, a very large quantity of hardened dung was found in the intestines; the latter of which were of a black livid colour.

Hay that is given to such horses as are employed in active exercises, as I have formerly observed, should always be of the best quality, well flavoured, and well got in. Small quantities at a time, shaked free from dust, should be put into their racks through the day; and, when they cannot go abroad, as in bad weather, to exercise, they should be tied up to the rack for some hours, or a bundle of clean wheat straw should be laid before them, which will amuse them. There is no danger of their eating too much of it; on the

\* A practice but too much in use in such cases, and which cannot be too severely censured.

† An operation easily performed on horses. After the hand and arm are greased or oiled, the hand is introduced into the rectum, and the hardened dung taken out by degrees.



contrary, it will be of great service to them. Horses should always have their stated times of fasting, as well as that of feeding. The keenness of their appetite for hay should always discover itself by the same eagerness which they show for their oats.

Many people are of opinion that hay cannot be too old for such horses as are employed in active exercises. I shall only observe, that hay, although kept in the best manner, like all other herbs and vegetables, will retain its juices and flavour for a certain time only; after which, it loses both, becomes dry and insipid, and of course is rendered unfit for nourishing an animal body. Besides, as it requires a great supply of saliva from the mouth and jaws to moisten it for swallowing, which creates thirst, horses are not fond of feeding upon it; neither do they care to eat much of it without drinking water frequently, which, in the above cases, would be very improper for them.

The best argument that can be used in favour of old hay, for horses that are employed in active exercises, is, that they cannot, for the reasons already mentioned, eat too much of it, and having, at the same, a good allowance of grain. Hence they are found to be in a proper state for such exercises, because their stomachs are not oppressed with too much fodder, nor their bowels loaded with undigested food. This is what I have all along been contending for, and shows the propriety of giving horses a very small allowance of fodder at one time, even of the very best quality.

It has formerly been observed, of the Arabian and other foreign horses, who are very fleet, and are able to undergo incredible fatigue, that they are allowed but a very scrimp allowance of fodder, which is barley-straw; that they are mostly fed with barley; and that their bodies are

rather meagre than fat; which is the best state or habit of body, for active exercises of any kind.

By feeding horses according to the method here recommended, the stomach will be free from that oppression which always attends too great a fullness, and at the same time, retain its full strength, to exert its digestive powers, so as to produce the most wholesome and nourishing chyle; and hence the body will be healthful, active, vigorous, and fit for the most violent exercises.

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## C H A P. III.

## O F W A T E R.

A SEPARATE chapter on water for the drink of horses, may, at first view, appear unnecessary; but, when it is considered that some of the diseases they are liable to may originate from the constant use of unwholesome waters, it is apprehended some remarks on the different qualities of fresh water may be of use. It is likewise of importance, in the management of horses, to caution against indulging them in drinking cold water of any kind, in certain situations and circumstances, as they are guided entirely by appetite, the gratification of which, on certain occasions, may prove fatal to them; although horses at liberty in the fields are in no danger, in this respect, at any time, nor in any season.

Water is the main diluter of the food and fluids in general. It likewise becomes the vehicle of all

nourishment to animal bodies. On that account, we cannot be too anxious about its qualities, nor delicate in our choice of it, either for our own use, or that of our horses, as it partakes of the qualities of those bodies it passes through, whether they are metallic, saline, or earthy, &c. these foreign matters mixing with the fluids of an animal body, according to their different gravity, and the capacity of the canals through which they circulate, will be, by the laws of motion, deposited on one part or other of the body.

As a considerable proportion of water enters into the composition of animal fluids, it likewise bears a considerable proportion in those that are secreted. A large quantity of water being thus diffused through the whole mass of fluids in the body, adds, to its fluidity. Hence it will be obvious that constant and frequent supplies of water are not only necessary to dilute the food in the stomach, but the mass of fluids in general, as they, even in the most healthy state, have a constant tendency to putrefaction, and require constant supplies both of food and drink, to keep them sound and sweet.

Physicians, who have searched into the causes of diseases in the human body, alledge that some of the most obstinate chronic diseases proceed, in a great measure, from the use of unwholesome waters; and, by comparing the different strata of earth through which water passes about populous cities, they affirm that, where the water is bad, those diseases prevail most. It is likewise thought that gravelly complaints may be owing to the same cause. In like manner, water which contains mineral bodies, and nitrous salts, is thought to enlarge the glands of the throat and jaws; and hence it is said that the inhabitants about the Alps, &c. where the waters abound much with

these qualities, are much disposed to this disorder, insomuch that scarce any who live in such situations are exempted from this inconvenience.

It would appear that those waters which are most unwholesome are not digestible, or that they do not assimilate or mix intimately with the fluids ; and hence they prove the source of calculous concretions, and hard swellings, in different parts of the body.

Thus, we find that the effects of unwholesome waters upon the human body are great ; and, if the diseases of animals, particularly those of horses, were thoroughly investigated, it is more than probable that they would be found equally hurtful to horses ; for it is certain that they are subject to diseases which, in many respects resemble those of the human body. We likewise find, upon dissecting their bodies, that they are subject to calculous concretions, and hard tumours, in different organs, and which may originate from unwholesome waters.

Although there are no cases upon record, in books of farriery, ascertaining the existence of stones being found in the bladder of horses, equal in size to those that are found in the human body, yet, from a variety of symptoms that I have observed about horses, and the frequent attacks they are liable to, of a suppression of urine, together with the great difficulty some horses have at times in making water, I have always thought there was reason to believe that many of them labour under this disorder in a greater or lesser degree ; but I have now the most undoubted proofs that horses are subject to calculi or stones in the bladder, as I have several of them in my possession that were taken out of the bladders of different horses after they were dead. Some of these stones are of a considerable size, and weigh ten

ounces; others of a smaller size, which, from their concave sides, and other appearances, evidently show that there was a number of them in one bladder at the same time, as they have the same figure and shape that a number of clay-balls would have when pressed together. That they have stones in their kidneys is very well known. The same is observed in the kidneys of sheep and oxen. It is likewise well known that some horses pass a considerable quantity of gravel with their urine, and that they are subject to gravelish complaints. Hence it may be inferred, that, as the food of horses is exceedingly simple and uniform, that the calculous concretions that are formed in the urinary passages, and in the bladder, may proceed from the water they drink.

Dr. Bracken, in his second volume of Farriery Improved, when treating of the gravel, (page 229), seems to be of this opinion. He says, "But the greatest cause of it (in my thoughts) is owing to their drinking such waters as, by running through various strata of earth, are impregnated with stony particles. In short, whatever can bring on an accumulation of earthy, or rather *tartareous matter*, in the urinary passages, whether by obstructing or lessening the capacity of the canals, or by immediately or remotely producing the substance itself, will cause gravel, and in time the stone."

It has frequently been observed, that horses do not thrive on changing from one part of the country to another, although their treatment, in every respect, be the same, the difference of water excepted. This perhaps may, in a great measure, be owing to the quality of the water they drink, and which may be possessed of different qualities from that to which they had been accustomed. This is particularly observed in those places where the stable-yards are supplied from

pit-wells, some of which are very deep, and the water very hard, which occasions that chillness, trembling, and shaking, which frequently is observed in horses, when they drink it immediately after it is newly pumped, and which causes their coats to *flare*, and stand on end, for a considerable time, and sometimes they are griped, and seem greatly out of order.

Spring-water is liable to partake of all the metalline or mineral strata through which it passes. Hence it becomes noxious or salutary, according to the nature of those substances with which it has been in contact.

River-water has likewise its different qualities from the various soils through which it travels; but, in general, it is much softer than water that runs under ground, and therefore much fitter for use.

Well or pit-water is subject to all the inconveniencies of spring-water, with this additional circumstance, that it is generally hard, and by stagnating long in the well, it may there take up from the bed it lies upon such particles as may render it more unwholesome; therefore the goodness of all well or pit-water is to be doubted, and particularly that which is taken from very deep wells.

Pond-water, under which head may be included all stagnant-waters, which generally proceed from rain. Where it lies on a clean or a clay bottom, and is fresh, it answers very well for cattle of all kinds; but, in warm weather, it is apt to corrupt and ferment, which renders it unwholesome and makes such waters the most uncleanly and disagreeable of any.

Upon the whole, those waters that are lightest, and readily break soap, are the best, as they easily digest and assimilate with the fluids of an



animal body, and therefore are the fittest to be used for drink.

To correct the hardness of pit-water, and render it more salutary for horses to drink, it should be pumped into a large trough, and exposed to the open air for some time before it is used; or, if a cart-load or two of clay or chalk were thrown into the well, it would greatly improve the water. It has likewise been found, that breaking down a piece of clay, about the bigness of an apple, in a pailful of hard water, before it is given to horses for drink, morning and evening, that it produced a considerable change on the *coats* of horses to the better; for it will be found that, where horses are obliged to drink hard water, they are for the most part, rough haired, and, at the same time, they will have a great deal of dusty matter at the roots of it, even although they should be well curried, and brushed frequently in the day; which plainly shows that there is some obstruction in the pores of the skin, which prevents the natural perspiration, and, of course, that glossy shining appearance of the hair, which is observed in all horses who perspire freely, through the pores on the surface of the body. Hence it would appear that this cutaneous obstruction proceeds from the constant drinking of hard or bad water.

Water that runs through lime-stone, although exposed to the open air in large ponds, will retain its hardness, and produce all the effects above mentioned on horses that drink it constantly. This was observed at a nobleman's seat in this neighbourhood. On mentioning the above circumstance accidentally to a great breeder of cattle from the north of England, he advised the nobleman to throw some cart loads of clay into the pond, which produced a considerable change on the water for the better.

When water in pie-wells is rendered impure, from stagnating too long, without being drawn off by pumping, or when it has acquired any bad smell, by impure water getting into it, or full of animalcula or small earth-worms, by throwing into the well a few shovels full of burnt lime, it will become pure and sweet.

Horses have a delicate taste and smell, and are very nice in the choice, both of what they eat and what they drink; of course, they shun, when it is in their power, everything that is disagreeable to either. But, when they are long restricted from drinking water, they will, in that case, offend their taste to gratify thirst. This is evident from their readily drinking water strongly impregnated with nitre, or with quick-lime, in certain cases, when given as a medicine. But this restriction ought never to be laid on horses, more especially when they are labouring under any inflammatory diseases; as, in such cases, they cannot drink too much, in order to dilute their blood, and promote the natural secretions; but it too frequently happens, through mismanagement, that they are forced, from necessity, to drink water which they loath, and that very sparingly; when, at the same time, if given them in a proper manner, and of a proper temperature, it might prove, in many cases, the best medicine they could get.

Horses should never be suffered to drink too much cold water at one time. If they should exceed in this, it shows that they have been neglected in this respect; for, if they had always water at command, they would drink often, but never too much at once. For this reason, water should be offered them frequently, but not in too great a quantity. Neither should they be allowed to drink much water when they are going to perform any active exercises.

It is very refreshing to horses to allow them to wash their mouths and throat by a glut or two of water, after performing any severe exercises; but they ought, on no account, to be indulged in drinking a quantity of cold water when they are overheated. This should be particularly guarded against, as the consequences are dangerous, and frequently prove fatal to them; for, when a quantity of cold water is taken into the stomach in this heated state, when its vessels are full, and distended with blood, a stagnation of the blood in these vessels takes place, a mortification follows, and death ensues; therefore, when a horse has been overheated, from exercise, &c. small quantities of water should be given him at a time in a pail, but not till he appears to be thoroughly cool; and, in very cold weather, the chill may be taken off, by mixing the water with that which is a little heated. In these cases, it is likewise of service to put some oat-meal in the water, or bran.

It is a common practice to ride horses pretty hard after they drink water, in order (as the phrase is) *to warm it in the horse's belly*. Walking, or trotting gently, may be of use, but any quicker motion, in this case, is extremely hurtful. In traveling, towards the end of a stage, if a horse is not too warm, it is very proper, if an opportunity offers, to give him a little water, but by no means to suffer him to drink too much.

## C H A P. III.

## O F E X E R C I S E.

**B**Y exercise I mean only in regard to such horses as are allowed to stand too much at rest in the stable, and at the same time are full fed, and breathe constantly a hot foul stagnated air in close stables; the whole of what is here advanced being calculated to promote the health and soundness of horses, by recommending such precepts as may contribute to preserve them in a proper habit of body, and render them fit for active exercises, in order that they may perform them with ease and freedom to themselves, and with pleasure to their owners. At the same time, it will shew how much it is the interest of those who keep horses, and wish to have them in health, &c. to attend particularly to this important article.

It will perhaps appear strange at first view, to assert that a much greater number of horses who are high fed, and stand much at rest in close warm stables, die of diseases which are brought on them from the want of regular exercise, especially in great towns, than from any other class of diseases to which they are liable.

Horses are formed for labour. Inactivity renders them unfit for it; and, at the same time, it is hurtful to their health, in a variety of respects.

Inactivity, with full feeding, renders the body dull and sluggish. The stomach is loaded with food, which it cannot properly digest. The food is detained too long in the bowels. Hence indigestion, costiveness, and flatulencies. The intestines, in this loaded state, press upon the surrounding viscera, and obstruct the circulation of

the different fluids in them. The liver, mesentery, and spleen, are exposed to be injured from this cause; their natural functions are impeded; the animal œconomy is disturbed; and, when this is the case, the constitution must be injured, and diseases ensue. The natural secretions are not in due quantity; they, together with the perspiration, are retained in the body, and are absorbed or taken up again into the mass of humours. And hence arises another source of disease. The circulation of the blood, through the whole system, is slow and languid. Hence the humours or juices are not properly prepared; glandular obstructions are formed in different organs of the body; the *sheath* and legs swell; running sores take place in the latter, commonly called *grease*; and the whole mass of fluids are greatly disposed to putrefaction; diseases follow, and death frequently concludes the scene.

On the other hand, constant and habitual exercise renders the body strong and active, and, at the same time, fit for the most violent exercises. All animals, when left to themselves, are directed by natural instinct to use exercise. Young animals, in particular, show a strong propensity to it; and the very nature and constitution of a horse requires a considerable proportion of exercise at all times of life.

Exercise acts as an assistant to the heart, in promoting a free circulation of the blood and juices through every part of the body. It creates an appetite, and promotes digestion, and thereby greatly assists in converting the food to nourishment. It promotes all the secretions and excretions, which enlivens the body, and gives room for fresh supplies of nourishment; it invigorates the whole system; it gives a flow of spirits, and adds firmness and strength to the muscles and fi-

news. In short, without a certain proportion of exercise, no animal body can enjoy health.

The motion of the body, or what is called muscular motion, causes the blood and juices to circulate freely through every part. As this motion continues or increases, the breathing becomes quicker and shorter, and the perspiration is forced out at the pores of the skin. The sweat then becomes visible on the surface of the body, in the form of steams like smoke. The wetness on the skin sometimes resembles froth, and is sometimes thin and watery, according to the habit of body the horse is in at the time. The sweat of a fat horse is always clammy, and of a frothy appearance; that of a thin meagre habit, when in good condition for exercise, is thin and watery.

It has already been hinted, that the constant and habitual use of exercise, or labour, increases the firmness of the muscular fibres, which being thereby more closely compacted, the serous or watery parts of the fluids are more expressed from their interstices, by which they acquire a degree of rigidity, that causes as it were, a dryness of the whole muscular parts. Hence the difference is very visible to the eye, between the firmness of the flesh of post, running, and hunting horses, and those that are fat and little used to labour or exercise.

The effects of exercise to horses are not only beneficial to their health, but, at the same time, it keeps them in that condition which is necessary to preserve them in proper order for performing the various labours which may be required of them. Besides in many cases of beginning disorders, its good effects soon become visible, when it is used as a medicine, in those horses who have swelled legs, &c. from standing idle in the stable. For altho' such horses may have been declared full of



*humours*, and that nothing could relieve them from these supposed humours, but purging, diuretic, or alterative medicines, yet it has been frequently found, that regular exercise, frequent rubbing of the legs, with a roomy stall to stretch their legs when they lie down, have removed these complaints, without any medicine whatever.

It has already been observed, that in great towns most horses that are kept there are much injured for want of regular exercise. They stand in the stable, pampered to the full with the richest food, for days, nay even for weeks together, without going any farther than the water, and frequently even that is carried to them. Hence their stomachs are filled and overloaded with gross food. This produces a crude indigested chyle, which vitiates the blood, and disposes it to disease. Rides, or covered shades, for exercising horses in all weathers, are extremely useful; and no stable-yard, in large towns, should be without them; although, at the same time, the open air is preferable to too close shades, or riding-houses.

I remember to have somewhere read of a fact that seemed to have all the marks of authenticity, and which is applicable to the present subject, the substance of which is as follows: the governor of a fortress on the continent having been unexpectedly shut up in his garrison by the enemy, at a time when he had admitted a considerable body of cavalry of his own party on their march. In such a situation, the cavalry were looked upon as lost; but, to the amazement of those who saw them when the siege was raised, they were not only in health, but in excellent order, and fit for the most active exercises. The method which the governor ordered them to be treated was thus: as he had no room to exercise them but in

the stable, which was bomb proof, he ordered three men at a time to each horse; one to get on his back, the other two were stationed on each side behind him, with long whips in their hands; they were ordered to make the horse stir about from side to side, till such time as he was covered with sweat; the men, when tired, were succeeded by others. Others again were ordered to rub the horse down till he was quite dry. This manœuvre was repeated every day, which afforded exercise both to the men and horses, and preserved both from those diseases which arise from inactivity.

From what has been said, it will appear how salutary, and even necessary, regular exercise is in preserving horses in health. From the same reasoning, it likewise may be inferred, that they should be accustomed to labour and active exercises by degrees; for all sudden changes, whether from idleness to active exercises, or from these exercises to idleness, produce considerable changes in the system, and render both the solids and fluids liable to disease. This we experience from our own feelings. When a man, who has not been accustomed to undergo much fatigue performs any violent exercise or labour of any kind, by which he has been overheated and fatigued, while he is warm he feels no complaints; but, when he cools, he will feel himself stiff, and all over pained in the muscular parts; but, if he perseveres in the daily use of the same exercise or labour, it becomes at last familiar to him, so that he can perform these exercises with ease to himself, and at the same time he will be free from those pains in the muscular parts which were at first occasioned by exertions to which they had not been accustomed. It is the same with horses, on their being first set to hard labour, or violent

exercifes, although they cannot exprefs their feelings; yet the flill contracted lungs, obferved upon moving them about after a hard day's work, fairly difcover that this is the cafe with them. Accuftom them regularly to the habitual practice of thefe exercifes or labour, it then becomes eafy to them, without any ftiffnefs or difficulty of breathing following from it. Hence, when a horfe has arrived at this ftate, or habit of body, he is then faid, in the ftable phrafe, to be *in wind*.

But one great fource of difeafe in horfes arifes from the improper treatment of them after they have been overheated by exercife or hard labour. This, one would naturally think, fhould occur to every man from his own feelings; but this is not the cafe; there are many ftable people of fuch a particular way of thinking, that, although a horfe fhould be all over wet, and fmoking with fweat, ftill they will infift, according to their own way of expreffing themfelves, that he is not heated *at the heart*, and expofe him to the cold air uncovered, tied at the ftable-door, and even allow him to drink his belly full of cold water in this heated condition. It would fill a volume to enumerate the many cafes that have occurred where this treatment has proved fatal to horfes.

When a horfe grows warm from violent exercife, the velocity of the blood, &c. as I have already faid, is then greatly increafed, by which the fmallervelfels are dilated, and admit of the groffer fluids, which do not ufually circulate in them. This is evident when a horfe has been hard rode, from the rednefs of the white of the eye, the velfels of which admitting the red blood into them. There are likewife a number of fmall blood velfels, which may be obferved on the furface of the fkin, that are not viible when a horfe is

cool, and at rest. All these circumstances plainly show the rapidity of the circulation during the time of violent exercise. When the horse is properly taken care of, and allowed to cool gradually, the celerity of the blood, &c. abates, the vessels contract, and repel these grosser fluids back into the larger vessels, and, by degrees, the fluids return to their former course and place. But, if the body is suffered to stand still, exposed to cold air, or if the horse is suffered to drink cold water, the vessels, contracting suddenly by the cold, (whether it is applied to the internal organs, as the stomach or lungs, or to the external surface of the body,) retain the grosser fluids that have entered them. Hence, in the former cases, violent inflammations, gangrene, and, of course, sudden death. In the latter, all the diseases that are consequent upon obstructed perspiration. Cases of this kind frequently happen to the human body, when those who are overheated are so imprudent as to expose themselves to cold air, or to drink cold liquors. Death is too frequently the consequence, or they are seized with the most violent and acute diseases.

Van Swieten, in his Commentary, (Vol. I. page 341.) records the case of Alexander the Great, who, "when covered with sweat and dust, went into the Cydnus to wash himself, in a very hot country, and the hottest time of the day; as soon as he entered the water, his limbs grew stiff on a sudden, and he turned pale all over, and the vital heat forsook almost every part of his body. His servants received him like a dying man, and carried him scarcely sensible to his tent. So suddenly was his strength destroyed, young and hardened as he was by warlike toils; a violent disease immediately seized him, who was perfectly well before, from which he very difficultly el-

caped, by the skill and fidelity of Philip his physician."

Such are the consequences arising from the imprudent exposure of the bodies either of a man or horse to too great a degree of sudden cold, whether it be applied to the stomach in drinking cold water, or to the external parts of the body, when overheated; of which a great variety of cases might be mentioned, which have occurred to both, and which is confirmed by observation. For every summer produces fresh instances of diseases and death to individuals, from going into the water to bathe when the body is overheated; and every day produces the same instances in horses, as they, when travelling or hunting, are obliged to go through waters that lie in their way: for which reason, every one who has a regard for his horse should, if possible, endeavour to shun it, and go to where the water is less deep, or to a bridge, although it may be at a considerable distance; as plunging a horse, when overheated, into cold water, not only endangers his life from the most violent acute diseases; or, if he should survive the shock, it occasions the most obstinate chronic complaints in the chest, legs, and feet, which may render him useless.

Although a certain degree of exercise be absolutely necessary for the health of such horses as stand much at rest in the stable, with too full feeding, yet it may be observed, that, like many other things relating to horses, it may be carried to excess, and may prove more hurtful than beneficial; therefore, the time and manner of regulating it deserves attention. Thus, it would be imprudent to cause a horse to exert himself too suddenly after he is newly fed and watered, because his stomach is then too full. They should be moved slowly and gently at first setting

out. They will naturally mend their pace of themselves. Their exercise should be continued in proportion to their strength, manner of feeding and the labour, &c. required of them; and this should be repeated every day when it is practicable, and the horses not otherwise employed; increasing their exercise as circumstances may require. From not attending to the above precautions in exercising horses, how many cases of broken wind, and other athmatic complaints, might be referred to such causes?

It is likewise improper to take out horses to exercise in wet or rain, or when they are not able to bear it, either from former fatigue, from hard labour, or when they are sick or lame.

But the greatest caution is necessary to be observed with horses that are very fat. They require a long course of very moderate and regular exercise before they can, with safety, be put to that which is the least violent. Their fat, by the excessive heat their bodies acquire by violent exercise, is melted, as it were, into oil, and carried into the blood, when it causes what is called an *oily plethora*, which produces the most violent and sudden inflammations in the lungs, &c. The viscosity of the oily matter obstructing the vessels, and preventing the other fluids from passing through them, frequently occasions sudden death; many instances of which I have known, particularly in those horses that have been fed with a great deal of boiled meat, in order to fatten them for sale. Thus, a pair of strong heavy carriage horses were once offered me for sale. I declined purchasing them, on account of their extreme fatness, which was thought very singular. A gentleman in the neighbourhood, who was not so scrupulous, purchased them. They were constantly and regularly exercised with the greatest



care and attention for a considerable time, in order to reduce their bodies, and bring them into a proper condition for work. After this had been continued for some weeks, they had occasion to travel pretty smartly a very short stage of seven miles out and home, which finished one of them after a short illness. This, and a variety of similar cases, which will readily occur to every one who is acquainted with horses, may serve to shew the danger of putting those that are too fat and full of juices, too suddenly on violent exercises of any kind; for, as I have frequently hinted, there is no state or habit of body a horse can be in, more dangerous, or more liable to disease, or that runs greater hazard, when attacked with disease, than that of being too fat.

Thus I have endeavoured to shew the advantages that arise to horses from the constant habit of moderate exercise. It perhaps may be of use to pursue this subject a little farther, and consider the effects it produces when carried to excess, and the consequences that follow from it, on horses being too suddenly exposed to cold air, or plunged in cold water.

It has been observed in animals that have been hard hunted before they are killed, that, upon taking off the skin, the whole *panniculus adiposus*, and even the muscular parts, have been found almost black, from the blood being extravasated under the skin, or by the extreme heat of the body, together with the velocity of the circulating fluid, and that the blood has been forced into those vessels in which it does not commonly circulate. The same appearance I have observed in horses, particularly one that suddenly fell down dead in a race on coming up to the starting post the last heat. When they were taking off his skin, the blood appeared as if it had been ex-

travasated between the flesh and the skin, and run down in a considerable quantity, as the horse was then hardly cold. It is likewise observed in cattle that are drove too hard, immediately before they are slaughtered, that the blood is too much mixed with the flesh, &c. All these circumstances demonstrate, that, in violent exercises, the blood is forced by the rapidity of the circulation, and extreme heat of the body, into vessels in which it does not circulate in the ordinary course of circulation. Whilst the body is in this heated state, if cold water is thrown upon it, or the horse plunged into cold water, or too great and sudden a degree of cold in any shape applied to the body, the fluids, as I have formerly hinted, are retained there, by the vessels contracting suddenly; and, as these extravasated fluids cannot so speedily be absorbed, or taken up by the absorbent vessels, and conveyed into the circulating mass, they may then be said to be in a state of stagnation. Hence inflammation, gangrene, and mortification, follow.

This may be further illustrated by considering the manner in which horses are affected in that disorder which is commonly termed a *founder*, the symptoms that take place in the different stages of the disorder, and the circumstances that appear on dissecting those who have died of it. As this disorder always proceeds from cold too suddenly applied to the body, whether it be from a current of cold air, or from plunging the body into cold water, when overheated, the effects are the same. The symptoms at first are these, when the horse begins to cool, he appears very stiff and feeble in his fore quarters, and, when forced to move forwards, he collect his body, as it were, into a heap, and brings his hind feet as far forward under his body as he possibly can, in order to re-

move the pressure of the weight of his body from the fore legs and feet ; at the same time, he sets his fore feet to the ground with seeming great pain ; his fore parts are extremely hot, the legs considerably swelled, and evidently painful to the animal when touched ; a violent fever succeeds, which, if not properly treated, terminates in death, or if the horse survives the shock, in incurable lameness. On dissecting the legs and shoulders of those horses who have died in a few days illness of this disorder, the blood is generally found extravasated, as mentioned above, the parts having a black appearance, especially between the skin and the flesh. The same blackness is likewise observed in the cellular membranes between the interstices of the muscles and tendons, the texture of the vessels are destroyed and mortified. The following case was communicated to me by a very judicious farrier in London. A gentleman, being eighteen miles distant from London, was anxious to be in town before it was dark. He rode his horse very hard through a deep snow, during a severe frost. When the horse was *suppered up* after being well rubbed over, he lay down, and was found in the same situation next morning, but unable to rise, or stand when up. On the third day, both his fore hoofs fell off. This was a founder of the very worst kind. The excessive coldness of the snow, to which his hoofs and legs had been so long exposed, when they were overheated, produced the effects above related in the case of *founder*. The violence of the inflammation that had taken place within the hoof had destroyed the texture of the vessels, &c. Hence, all manner of connection between the hoof and internal parts of the foot being destroyed, they became loose, and fell off. The same effects happen in the human body ; when a vio-

lent inflammation takes place about the ends of the fingers or toes, the nails come off.

Plunging horses in cold water, when they are overheated, has the effect to weaken them, as would appear from the following observation, communicated to me by a gentleman who is a great sportsman, and at the same time is well skilled and acquainted with horses, "That, in hunting, when they are overheated, and obliged to go through deep waters, especially if they are obliged to swim, they soon after become faint, jaded, and tired."

It may be urged by some people, that they have known horses plunged into cold water, when they were overheated, and likewise exposed to the inclemency of the coldest weather, without any such bad consequences following from it. This will readily be granted. I would again ask, how comes it that one man is seized with a disease, whilst another, in the same circumstance, place, and situation, escapes it? The answer to both is obvious. It depends on certain circumstances of habit of body either may be in at the time. Thus, it frequently happens, that two horses yoked to a post chaise, the one a veteran hardened by labour, &c. the other a fresh horse, when over-heated on the road, and obliged to go through deep waters, the veteran shall be affected with the disease termed a *founder*, whilst the other is not; although it more frequently happens that young, or fresh horses are much more liable to be injured from such treatment.

As the diseases which arise from obstructed perspiration are sometimes rapid in their progress, a few general remarks on some of the most prevailing, or most dangerous, may be useful in this place, as it may be presumed that horses generally are more exposed to catch such disorders after

they have been overheated, more especially when they are improperly treated, or neglected.

It has been formerly observed, that, when the body is overheated by active exercises or violent labour, the circulation of the blood, &c. is carried on through the vessels with uncommon rapidity; of course, the respiration, or breathing, becomes more laborious, and more frequently repeated; at the same time the perspiration, from the pores of the skin, is considerably increased on the surface of the body, in the form of humid steams like smoke, and sometimes so profuse as to run down the skin, as if water had been poured on the body.

As this perspirable matter is very liable to be suddenly checked by cold, (in whatever manner it is applied, whether by a current of cold air, or water thrown upon the body, or horses plunged into it), and retained in the body, it then occasions a number and variety of diseases, which either affect the system in general, as in fevers, or when more local, and affecting the muscles, it produces rheumatism in the shoulders, neck, and legs; hence stiffness and lameness. When it affects any of the internal organs, as the bowels, it occasions colic pains, diarrhoea, or looseness; when it settles on the lungs, it produces coughs, catarrhs, peripneumony, or inflammation of the part, followed by consumption, &c. When on the membrane called the *pleura*, which lines the cavity of the thorax, it occasions the most violent pains or stitches, with difficulty of breathing, &c. When on the glands of the throat, swelling and inflammation, threatening a suffocation, and sometimes suppuration of these glands. When on the trachea, or wind-pipe, or the pituitary membrane which lines the cavities of the

head, disorders peculiar to these parts. The latter of which deserves particular attention.

As the pituitary membrane, which lines the inside of the nose and the cavities of the head, is now pretty generally known to be the seat of that disease in horses called the *glanders*, and which was first discovered by M. la Fosse, who is very justly entitled to the merit of it. He has at the same time pointed out the method of cure, when practicable, before the bones of the head become carious; of which Mr. Bartlet, in his *Gentleman's Farriery*, p. 119. treats pretty fully. He has likewise given a plate for explaining the operation of the Trepan, as proposed in the method of cure by M. la Fosse: but, as Mr. Bartlet has adopted an inaccuracy advanced by the former, which if not corrected, would mislead the young practitioner, I shall beg leave to mention it in this place, and point out the error. In p. 123. he says, "It is a curious remark of our author, that the sublingual glands, or the kernels situated under the jaw-bone, which are always swelled in this distemper, do not discharge their lymph into the mouth, as in man, but into the nostrils; and that he constantly found their obstruction agreed with the discharge; if one gland only was affected, then the horse discharged from one nostril only; but, if both were, then the discharge was from both."

It is surprising that Mr. Bartlet should not have corrected M. la Fosse in this anatomical error, of placing the sublingual glands under the jaw-bone on the outside, and mistaking the submaxillary glands for the sublingual; for, if he had inspected the head of a horse, he would have found the sublingual glands in their proper place, where their very name implies they should be, that is, immediately under the tongue, as in the human



body; he likewise might have traced their duct, or opening, to the two small papillae that are situated on the inside of the fore-teeth, under the point of the tongue, which demonstrates that they discharge their lymph into the mouth, as in man: and, in all the dissections I have made on glandered horses, I never found these glands affected; but the submaxillary glands that are situated between the jaw-bones on the outside, are always more or less swelled, inflamed, or indurated, according to the length of time they have been affected, or the virulence of the disease; they likewise discharge their lymph into the mouth, as in the human body; and their being constantly swelled in glandered horses, according as one or both sides of the pituitary membrane is affected, may arise from the same cause which produces the swelling of the inguinal glands, in the groin of the human body, in a gonorrhoea, that is, from the absorption of the virulent matter affecting them, and occasioning that swelling, induration, &c. Hence it is evident, that the swelling of the submaxillary glands in glandered horses, and of the inguinal glands in the groin of the human body, in a gonorrhoea, are only symptoms of these disorders.

The Count de Buffon, in his natural history of the horse, vol. 3. p. 382, alledges, that this disease, called the *glanders*, proceeds from the horse dipping, or sinking, his nose and mouth deep into cold water when he drinks. In comparing the manner of a horse's drinking with that of the dog, he observes, that "the horse, on the contrary, whose mouth is too small, and whose tongue is too thick, and too short, for forming a scoop, and who, besides, drinks with more avidity than he eats, briskly sinks his mouth and nose deep into the water, which he swallows

plentifully by the simple motion of deglutition. But this obliges him to drink without drawing his breath : while the dog respire at his nose during the time he is drinking. After running, when the respiration is short and laborious, horses should be allowed to drink at leisure, and to breathe as often as they incline. Neither should they be permitted to drink water that is too cold ; for, independent of the colics frequently occasioned by very cold water, it often cools their nose to such a degree, as brings on rheums, and perhaps lays the foundation of the disease called *glanders*, the most obstinate of all maladies to which this noble animal is subject. Besides, those travellers who give a detail of the diseases of horses in warm countries, alledge not that the glanders is equally frequent in Arabia, Persia, and Barbary, as in cold climates. Hence I am led to conjecture, that this malady is owing to the superior coldness of the water ; because these animals are obliged to keep their noses in the water a considerable time, which might be prevented by never allowing them to drink very cold water. Asses, which dread cold more than horses, and resemble them so greatly in their internal structure, are not equally subject to the glanders, which is owing, perhaps, to their drinking in a different manner from the horse ; for, instead of sinking the nose into the water, they barely touch it with their lips."

Although I cannot help differing in opinion from the Count in this respect, as I have known horses affected with this disorder who never had the custom of dipping or sinking their noses deep into water when they were drinking ; yet I agree with him on the general principles, that the cause of this disorder may proceed from cold affecting the pituitary membrane which lines the cavities

of the the nose, &c. for it generally may be traced to its very beginning, from some cold affecting the head, and which has either been ill-treated, or totally neglected; hence, therefore, it will be evident, that this disorder, like many others to which horses are liable, may be much easier prevented than cured, when once it has taken place: hence the necessity of paying proper attention to recent colds, in keeping the head and throat warm, and not suffering the horse to go abroad before he is thoroughly recovered, more especially in very cold weather.

When the pituitary membrane is affected with a recent cold, the small glands which are dispersed throughout the same become tumified, inflamed, &c. and, in place of separating a fine thin lymph like to pure water, which serves to lubricate and moisten the passage of the nose and cavities of the head, as in a healthy state, they then discharge a thick viscid mucus, known by the name of *snot*, which falls from the nostrils, according as one or both nostrils are affected. Though the disease at first is merely local; yet, when it increases by neglect, or otherwise, it spreads over the whole membrane which lines the cavities of the nose, &c. The membrane becomes thickened, lax, and flabby; its small glands become more or less ulcerated. Hence the quantity of mucus discharged from this large space of membrane becomes very profuse. The maxillary sinuses on each side of the nose, (called the *antrums*) which are of a very particular structure, being deep and hollow, resembling a purse with the opening on the upper part a little inclined to the passage of the nose, one or both of these cavities, according as one or both sides are affected, are soon filled with the mucus, where it is retained, and, from the heat of the parts, and its long

retention, it acquires a more virulent corroding quality, which adds to the general disorder. As the disease increases, the spongy bones in the head, of which there are several, become carious. The discharge then becomes extremely foetid, and of different colours, &c. the whole system being affected by the absorption of this corroding matter, the horse becomes hectic. It then becomes necessary to put a period to his existence.

On dissecting the heads of such horses as have been affected with this disorder, I have always found the pituitary membrane to be the seat of the disease, and the cavities formerly described filled with viscid mucus. In the first stage of the disorder it is of a mild bland quality, and of a white colour, without any particular smell. In the second stage it becomes more ichorous, foetid, and discoloured. In the last stage it is of a most offensive smell, and of a black yellowish colour, mixed with blood, the whole membrane being then turned into one continued ulcer, the spongy, and even the more solid bones become carious and rotten, all the cavities of the nose, &c. may then be said to be converted into one general mass of corruption. I have been the more particular in describing the general symptoms of this disease, together with the appearances on dissection, as the hints here thrown out may be of use in leading to farther discoveries, either for preventing or curing this loathsome disorder.

From what has been said, it will be evident, that there can be no great hopes of curing this disease in the two last stages. I shall only observe at present, that when a cure is practicable, it can only take place in certain favourable circumstances, and in the first stage of the disorder, before the mucus acquires any ichorous or bad quality,

or the bones become carious. It will still be more favourable when the discharge of mucus is from one nostril only. For the operation of the trepan, as recommended by M. la Fosse, I must refer the reader to Mr. Bartlet's description of that operation, which is pretty accurate; only I would observe, that, he directs the thin bony partition immediately between the scull, where the lower trepan is made, and the bone which forms the bottom of the maxillary sinus, where the mucus is lodged, to be perforated with a stileto, or sharp pointed iron: as this last operation is apt to make long fissures, cracks, or seams in that bone, by which means it becomes the more liable to be affected with the ichorous matter that is to pass through the parts, and by becoming carious may protract the cure; it will therefore be more advisable to perforate this thin bony partition with a trepan of a smaller size, and then with another still less to perforate the bottom of the sinus. Hence it will be necessary to make three perforations with the trepan, before the mucus confined in the sinus can be discharged, besides, the opening in the frontal sinus, which is made on purpose to syringe the cavities with proper injections.

Thus I have endeavoured to lay before the reader some of the general effects of a current of cold air, or cold water applied to the surface of the body of horses when they are overheated. The effects of too much cold water being taken into the stomach at once have been already mentioned in the chapter on water. It remains now to make a very short observation on too cold air being inspired into the lungs, when they are much agitated from exercise, and the body considerably heated.

However dry and elastic the air may be that is drawn into the lungs of an animal body in respiration or breathing; yet, when it is discharged

from them, it is evidently loaded with humid steams; at the same time it loses considerably of its elastic quality. The moisture that comes from the lungs evidently shows, that a very great portion of thin lymph, or perspirable matter, is discharged from them at every respiration; and, as this action is increased and quickened by exercise, the discharge of this fluid will be the greater. But, as very cold air is apt to constrict or shut up the cuticular pores on the surface of the body, in like manner, when it is applied to the surface of the lungs, especially when they are overheated, it produces the same effect there; hence, that perspirable matter which should be thrown out from them, is retained in the lungs, and produces colds, catarrhs, inflammation, and consumption.

Thus I have attempted to show the reader the disadvantages that arise to horses from errors in the management of them, respecting their stables, food, water, air, and exercise; and I hope I have in some measure pointed out how they may be remedied.

The observations that follow, on some of the surgical and medical branches of farriery, are continued on the same plan, and with the same view, of pointing out where errors likewise prevail in the practice of farriery. At the same time, I have endeavoured to show in what manner they may be rectified. They are not offered to the public as complete discourses on the different heads there treated of; but as loose hints in general, which, if duly attended to by the young practitioner, may be of considerable use to him in the beginning of his practice. The hints on the treatment of horses, when they are taken sick, or otherwise disordered, will, I hope, have



their effect in removing those practices that too much prevail in these cases, and which only tend to increase, rather than alleviate, the disorders they labour under.

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## C H A P. V.

### ON THE

## MANAGEMENT OF HORSES WHEN SICK.

**T**HE diseases to which horses are liable, have a great analogy to those of the human body; at the same time, they are almost as numerous, a few only excepted, which are peculiar to the latter, and which are thought to proceed from the passions, or other disturbances of the mind.

Here a question naturally occurs: how comes it that horses are so liable to such a numerous train of diseases more than other animals of the brute creation? The answer is obvious, they are more domesticated, on account of their services to man, than other animals, the dog only excepted; and even the latter is left more at liberty than the former. The history of the horse, in a natural state, affords no instances of disease amongst the species; neither is it found that they are liable to diseases when running wild in different parts of Britain. It is likewise observed, that young horses are not liable to diseases while they run at liberty, distant from towns or villages. They

seem to enjoy a perfect state of health till such time as they are taken into stables, where they are more immediately under the direction of man; it is then that this great change seems to take place on their constitutions. Hence, therefore, it may be inferred, that this proneness to diseases in them, must arise from the treatment they are subjected to in general; from the musty, close, hot, foul-aired, damp-stables, &c. they are confined in; from errors in their diet, drink, &c. from the want of regular airings and exercise; from the sudden transitions they are compelled to undergo, from heat to cold, and from cold to heat; and from a variety of other errors in treating them when overheated by violent or active exercises; from suffering them to drink cold water in that situation, or plunging them in cold water; neglect of proper friction or dressing, &c. &c.

On considering the variety of diseases to which horses are liable in a domesticated state, it is surprising what affinity there are in the symptoms attending each of them, with those which take place in the human body in the like situation; insomuch, that, if the symptoms attending any one of the diseases to which horses are liable were faithfully related to a physician, although he never saw a sick horse, yet he could from thence name the disease under which the horse laboured at the time. From these, and a variety of other arguments which might be offered, it will be obvious, that the cure of the diseases in horses must depend upon the same principles as those of the human body, and that the prevention of diseases in the former, must likewise depend on obviating the causes which dispose and render them liable to these diseases.

The plan I have adopted will not permit my

particularizing the treatment, or medicines, necessary to horses under different diseases; that will be the subject of a subsequent work. I only propose, at present, to make a few general observations on the common treatment of them when they are taken sick, or anywise disordered, and show the pernicious consequences that follow from errors in the management of them in that situation. I shall, therefore, confine myself to a few cases only.

*In Cases of Fever.*

If a close, hot, foul-aired stable, is pernicious to horses whilst they are in health, it is much more so to those that are sick, especially of a fever, and panting for breath. The extraordinary care that is then taken to keep the stable uncommonly warm, by which means all fresh air is excluded; the very threshold under the door, as I have elsewhere observed, even the key-hole, and not a crevice that would admit the least fresh air, but what is shut up: in such circumstances, the air within the stable is speedily exhausted, and becomes extremely corrupted, insomuch, that it is not only hurtful to the sick, but to the other horses that are in the same stable with him. This cause alone is sufficient to excite the most violent fever, and inflammation in the lungs, even of the most healthy and sound animal.

Besides the great heat of the surrounding air, in which the horse stands and breathes, his body is kept uncommonly hot by means of a greater load of cloathes than usual, together with a greater quantity of litter under him; and, to add to all this, the vapour and hot steams which arise from the other horses bodies, excrements, wind,

and urine, that are shut up in the same stable, render the air very unfit for respiration, the sick horse is stifled with heat and the closeness of the stable, he pants for that fresh air which is excluded from him; the great heat in which the horse's body is kept increases his disorder, and, if sweating is produced, this, in many cases, aggravates it still more, by carrying off the thinner parts of the blood, the remaining mass becomes more viscid and inflamed, which renders it less fit for circulation. In this situation, the best medicines, however judiciously prescribed, can be of no avail to the sick, as their effects are counteracted by the above treatment.

I have formerly hinted at the pernicious consequences of using too tight rollers above the horse's clothes, which confines the lungs, &c. by their compressing the parts too much even in health, it is much more hurtful to horses when sick, and particularly in the situation above mentioned. If a man in a fever were girded round the breast with a roller or bandage, it would occasion the utmost anguish, and difficulty of breathing, and endanger a suffocation; even the weight of the bed-clothes is found oppressive in these cases; how much therefore must this anguish and oppression be in horses that are sick, and panting for breath under a fever, when these rollers are girded so tight, that a horse, even in health, can hardly breathe with them. I have frequently found, that the ungirding of these rollers gave immediate relief to sick horses, especially in the above situation; and, on admitting fresh air into the stable, the violence of the symptoms were considerably abated.

For the reasons now mentioned, a sick horse should, if possible, be removed to a well-aired stable by himself. But, as horses are very sociable.

creatures, and fond of being in company with others, where they are found to thrive best, another horse may be put in the same stable with him, but at as great a distance as the place will admit of, in order to let the sick breathe a purer air. His cloathing should be very moderate, and by no means girded on too tight about the breast, but only in the slightest manner, to prevent them from falling off. The rack and manger ought to be washed clean from dirt, &c. with soap and water, before the sick horse is put into the stall; all the old litter, wet or musty straw, should be removed; the fresh litter that is put under him should be spread thin, as too much of it increases the heat about his legs, &c. The rack and manger are afterwards to be kept clean, and free from the snot, and other discharges that may come from the nose and mouth, as they are very apt to lick it up with their food, or by way of amusement. When the horse's breath is very foetid, or of a bad smell, the violence of the fever still continuing, the rack and manger ought to be frequently washed or sprinkled with vinegar.

### *Diet for Sick Horses.*

With respect to the diet for sick horses, it may be observed, that, in some diseases, even of the inflammatory kind, the appetite for food is not much diminished; in others, when very sick, they refuse every kind of food. In the former case, it ought to be given in a small quantity at a time, and frequently repeated; it should be of the softest kind, as mashies of scalded bran, boiled barley, malt, or dry bran, if the horse refuses soft food. In the latter case, when the horse refuses food of every kind, it is too common to force it upon him, by pouring wine sops, &c. down his

throat, under the apprehension that the horse will suffer from the want of nourishment: but this is not the case; if the stomach loaths food, it is a certain sign that it is disordered, and therefore cannot digest it. The throwing or forcing more food into the stomach, serves only to aggravate the disorder, by increasing that oppression which already prevails there too much. It is to be observed, that the stomach of a horse has not the faculty of vomiting, or even belching up wind by the mouth, which, in these cases, might give him instant relief. If a horse will drink water freely, that is the best medicine in such a situation, as it dilutes the contents of the stomach, which affords an easier passage for them into the intestines. Therefore, no food whatever should be forced on sick horses; neither should they be tempted with oats, or other nourishing food, as it is by no means proper for them in such a situation, although they should seem to relish such food, which they frequently seem to do by way of a change.

In place of oppressing the stomach of a sick horse, by forcing food on him in the manner above mentioned, with the view of nourishing him, art furnishes us with another resource to support him, if found to be absolutely necessary, and that is by clysters. How nourishment may be conveyed to an animal body by clysters, I refer the reader to the chapter on that head. I shall here only observe, that, after the intestines are emptied of excrement, by clysters of warm water, or of very thin water-gruel, in which a handful of common salt, or a few ounces of Glauber's salts, have been dissolved, nourishing clysters, composed of two or three quarts of thick water-gruel, may then be given with success, and repeated as often as may be found necessary.



There is no danger of a horse's suffering from the want of nourishment by the mouth, in a fever; but there is great danger to be apprehended from its being forced on him, as above mentioned, when the stomach cannot digest it. After the great intestines have been thoroughly emptied of the hardened excrements by clysters, the contents of the stomach find an easy passage into the smaller ones; it is then freed from oppression, and the horse naturally craves fresh aliment; when he recovers his appetite, there is danger in indulging him with too much at once; this should by all means be guarded against, in order to prevent a relapse.

With respect to giving medicines to sick horses, the greatest caution is necessary; for in inflammatory cases, to which they are very liable, every thing that is heating or irritating is extremely hurtful, and may occasion the most untowardly symptoms, and even death may be the consequence. The common cordial drenches that are too frequently given on most occasions, are the most pernicious and hurtful in inflammatory cases; as they are composed of hot spices, aromatic powders, with the oil of aniseed, &c. they aggravate the oppression at the stomach, and increase the fever.

In order to lessen the great heat of the body, and to allay the internal commotion which then prevails, such medicines may be given as are termed coolers or sedatives, from their known qualities of restoring regularity to the vascular system, and, at the same time, have the power of removing spasmodic constriction in the vessels, from the calm which succeeds their administration; for which purpose, nitre, or salt-petre, is amongst the best, and agrees very well with horses; one ounce of which, dissolved in a quart of warm

water, may be given three, four, or five times a-day, by a horn, when found necessary. I would here observe, that, in order to render the nitre more effectual, that it be in powder, and mixed with the water immediately before it is administered, as it loses considerably its cooling efficacy on being long dissolved; the draught may be sweetened with honey or molasses, in order to render it the more palatable. Another necessary caution I would recommend is, that the horse should be as little fatigued as possible in giving it. One man should hold up the horse's head with both his hands, whilst another pours the drink, by degrees, into the horse's mouth, and, when the horse seems tired or fatigued, to allow him time to rest himself at intervals. A variety of other cooling draughts might be mentioned; but, as there is no absolute necessity for studying the taste of horses in this respect, and, as nitre is found in general to sit easy on their stomachs, it will be found to be the best medicine that can be given in such cases: those who may be willing to change the prescription, may give the infusion of lintseed, mixed with acids, as the juice of lemons or oranges, or a spoonful or two of vinegar, where nothing else can be got, administered as above, and a little sweetened.

*In Cases of Gripes, or Cholic Pains.*

Horses are very subject to griping or cholic pains; they may proceed from flatulencies, or wind pent up in the stomach and bowels, from inflammation of the coats of the stomach and intestines, or from worms, spasms, &c.

When a horse is seized with griping pains in the bowels, it is common to give such things as

are of a heating quality, by the mouth, as pepper, ginger, the different kinds of aromatic powders in gin, or some other ardent spirit, together with oil of turpentine, oil of juniper, &c. Such prescriptions are highly improper, for the reasons formerly mentioned, in case the disorder should proceed from inflammation; as cholic pains, or gripes, from whatever cause, have some resemblance to one another, ordinary attendants cannot be supposed capable of making the necessary distinction between each species of them; neither is it necessary to particularize them at present, as the hints here offered are only calculated to show the bad consequences that may follow, from the giving of hot irritating compositions to sick horses, or, in cases of cholic pains; for, even on the supposition that the pains proceeded from flatulencies pent up in the stomach and bowels, the above mentioned heating compositions are improper, as it would appear they rarify the confined air, which, in this case, cannot find passage either upwards or downwards, it then occupies more space, and, of course, by distending the parts, increases the pain.

In such cases, the horse is generally costive, and the bowels are loaded with hardened excrements, which being collected in the rectum, or great gut, it presses down upon the neck of the bladder, and causes a stoppage of urine; and, as the horse naturally tries every means to relieve himself, he makes frequent motions to stale, but without effect; hence, many people overlook the real cause of the disorder, and attend only to the effect it produces; they therefore prescribe the strongest diuretic medicines, with a view to make the horse stale; from this treatment, and total neglect of the original cause of the disorder, it in-

creases, the bowels become inflamed, a gangrene and mortification take place, and death follows.

To corroborate what I have here advanced, I could add a number of cases, which have occurred in practice, and which have afterwards been confirmed, by inspecting the bodies of horses immediately after death; but the following will be sufficient: a horse in this neighbourhood, who had laboured under severe griping pains for two days, (a disorder commonly, though very erroneously, termed the *botts*, or *batts*, in horses, although that disorder is not produced by that species of worm, perhaps once in twenty or thirty cases, when they are said to be the cause) all the heating spices, aromatic powders, gin, oil of turpentine, &c. above mentioned, had been poured into his stomach, at different times, the disorder still increasing. The proprietor desired I should attend him: but, on seeing the horse, I concluded, from the symptoms about him, that he would soon die; which happened a few hours afterwards. On opening the body, a considerable portion of the bowels rushed out with great noise; they were inflated with air to a very uncommon degree, as if they had been blown up with a bellows; the stomach was in the same situation; but the lower or back part of the intestines, towards the anus, or fundament, was filled with dry hardened excrements, as if they had been dried in an oven; a great part of the intestines which inclosed this dry hardened dung, were black and mortified. From these circumstances, it would appear, that the hot medicines, &c. which had been poured into the stomach, had probably rarified the air in the stomach and bowels, and, as it could get no passage upwards, for the reasons formerly mentioned, by the mouth, nor backwards, by the anus, on account of the

hardened excrements lodged in the lower intestines, that the means which were used as a cure, contributed greatly to increase the disorder. But, if emollient or purgative clysters, or even those of warm water only, had been given the horse in the first stage of the disorder, they would have thinned the hardened excrements, and rendered them fit to be expelled out of the body; the wind, or air, that was pent up in the stomach and bowels, would then have found a passage backwards by the anus, and the horse's life might have been saved.

In all cases of violent griping pains in the bowels, bleeding is the first thing necessary, and that pretty freely, as that relaxes the whole system, and paves the way for other means, which are to empty the rectum, by taking out with the hand the hardened excrements that are lodged there; sometimes they appear softish, and the horse dungs frequently, from pain, in very small quantities at a time; but generally they are very much hardened; in this case, the operation formerly mentioned (which is called *back-racking*) gives the horse great relief, by removing the pressure from the neck of the bladder; the horse will then be able to stale; but the pain from the air that is pent up in the bowels may still remain; emollient clysters are then of great benefit, as they not only empty the intestines of the excrements, which affords a passage for the wind backwards, but they act as an internal fomentation, by which means they contribute to remove the spasmodic constriction from the bowels, and prevent inflammation; they may be frequently repeated, till the confined air finds a passage backwards by the anus; when once this takes place, it frequently passes off in great explosions, to the great relief of the horse. I have observed, in such cases, that the

air they passed, from being long pent up in the bowels, was more inflammable than ordinary, so as to catch fire from a candle, if it happened to be near, and spread a blue flame for a considerable space around, and sometimes to singe the hair and eye-brows of the bystanders who were within its reach.

All the different species of cholic pains, whatever cause they may proceed from, ought to be treated in the same manner, on their first attack, as it is a necessary step to free the intestines from what may tend to aggravate, or add to the disorder. This becomes the more necessary, as it is the only means that can be used with safety in horses, to clear the passages, and pave the way for medicines, which may be afterwards found necessary; at the same time, carefully avoiding the giving of medicines, by the mouth, that are either heating or irritating; if opiates are found necessary, laudanum may be given, to the extent of a table spoonful at once in a pint\* of thin water-gruel, by the mouth; the same quantity, if needful, may be repeated about three or four hours afterwards, or it may be given after the intestines are cleared of excrement, in a clyster, increasing the quantity to two spoonfuls, or more: a second bleeding may be necessary when the symptoms are violent.

When horses fall sick, it matters not with some what may be their complaint: it is too common to give them such things as many people esteem cordial or *comfortable* things to themselves, (according to the phrase); these are ardent spirits, a little diluted, or wines, ales, &c. either by themselves, or heated and mixed with different

\* English Measure.



kinds of spices. Wines, or ales, may be given in a very small quantity, to a horse that is in health, when tired or fatigued on a journey, or from very hard labour ; but they are by no means proper to be given in any quantity to a horse that is sick, more especially ardent spirits, as neither the stomach, nor the head of a horse, even in health, can bear much of them at any time ; they soon turn giddy, and lose the use of the hind-quarters during the fit of intoxication ; and when given to a horse that is sick, they may prove, as it were, fuel to the disease. It would take up too much of the reader's time to enumerate the cases which have fallen under my own observation, where the above treatment has been used, and the fatal consequences that followed from giving these *comfortable good things*, as they are called. It may be observed, that every thing is good of its kind ; but, at the same time, it is obvious that these good things may be misapplied, or not proper to be given in cases of disease. Thus, roast beef, every one in health, and with a keen stomach, will allow is *a very good thing*, but it is not so to a sick person ; he will nauseate and loath the very sight and smell of it ; or allowing, that, in some cases, he may have a little relish for, and eat some of it, yet it is not proper food for him, as the stomach cannot digest it ; a sick horse will likewise often show an inclination for oats, beans, &c. yet they are not proper food for him, for the same reason, as they oppress the stomach, and add to the disorder.

It is amazing what different kinds of compositions are forced down horses throats on these occasions. I shall mention one instance : a gentleman in London, who was greatly prejudiced in favour of vinegar, as a cure for many diseases ; he was fond of it himself, and used it frequently

with his food. His favourite horse was taken bad in very warm weather; and as he thought vinegar was a very good cooling *thing*, he ordered one English pint of it to be given his horse at once; it was no sooner swallowed, than the horse lay down, stretched himself, and died.

The treatment, in this last case, differs entirely from any of the former above mentioned, in a very opposite extreme; but as the nature of the horses complaint, in this last case, was not known, as the owner would not suffer him to be opened, and as I neverknew or heard of any other instance where such a quantity of vinegar was given at once to a horse, I cannot take upon me to say what effects it may produce; but if I may be allowed to conjecture, I would presume, from similar cases, that the coats of the stomach had been inflamed, a disorder which frequently takes place in horses, especially when there are worms in it; and in such cases any thing that is too cooling, acid, or sharp, in its nature, when poured into the stomach, may produce the same effects, and hasten the horse's death. I shall mention one instance. I was once desired by a farrier in this neighbourhood, who was indisposed, to visit a horse that had been a patient of his for some days, and report the situation he was in. His servant was giving the horse a drink when I entered the stable, which I was afterwards informed, was composed of an infusion of lintseed, in which was dissolved one ounce of sal nitre, with honey to sweeten it, in the last hornful was poured, from a small vial, about half an ounce, or more, of spirits of hartshorn. The horse seemed very uneasy after the drink; he was soon seized with a violent trembling and shaking; a profuse sweat broke out all over his body, and run down his sides, as if water had been

poured on him; at the same time his legs and ears were quite cold; he laid down seemingly in great agony; he was soon after convulsed all over, and died in about half an hour from the time the drink was swallowed. I obtained leave to take out his stomach where he was, on condition I should sew up the skin afterwards, in order to prevent any bad smell in the stable, till he could be carried off. On inspecting the stomach, the coats of it were greatly inflamed, a mortification had taken place on one side, where it appeared of a darker colour, in which there was a small hole, through which a lead probe passed into the cavity of the stomach from the out side; the coats of the stomach were considerably thickened, and of a darkish red colour, resembling that of the liver; at the same time it was considerably distended, and full of food: on turning it inside out, an incredible number of small worms, called *bolts*, were found sticking all round the sides and lower part of the stomach, insomuch that it appeared entirely covered with them, and sticking as close to one another, as bees in a honey comb \*; and so firmly were the heads of these vermin fixed in the coats of the stomach, that in endeavouring to pull some of them off when alive, they broke in two, and their heads remained sticking in the coats of the stomach.

The great irritation caused by such a number of these worms sticking in the coats of the stomach, had no doubt occasioned at first the inflammation there, and from its continuance, was tending to a mortification, before the drench was given, which would soon have occasioned the

\* A section of this stomach, with the worms still adhering in the same situation, I have by me preserved in spirits, in which is the perforation or hole where the mortification had taken place.

horse's death ; but there's every reason to think that the drench hastened it\*.

When horses are sick, warm water is generally prescribed them for drink ; this, from a variety of circumstances, is either totally neglected, or over-done, to save trouble, especially when it happens that the stable is situated at a distance from where it is heated ; on that account, a pailful of overheated water is presented to the sick horse, which he loaths. It is likewise too common to mix sal nitre in the water, the disagreeable taste of which prevents many horses from drinking it, besides, many horses are particularly shy in drinking warm water at any time ; hence, in such cases, they suffer considerably from the want of water to dilute their fluids in general, and to promote the necessary secretions of urine, &c. likewise to dilute the food that may be in the stomach. This deserves particular attention, and ought to be guarded against ; every means should be tried to tempt horses, if possible, to drink freely in such cases ; and sometimes it may be forced on them, by pouring it down their throats with a horn, for the following reasons. I have already observed, that the diseases to which horses are most liable are of the inflammatory kind ; and, as the thinner parts of their fluids are carried off

\* One remark, which is worth notice, in the above case : the horse was very fat, and had been only three weeks out of the dealer's hands, where he had been fed with a great deal of what is called *soul feeding*, which is grain of different kinds boiled together with the chaff, and which, it is thought, produces worms of different kinds in the stomach of horses : another circumstance is, that the horse died in the winter season, when bott worms are very uncommon, although they are frequently found in horses in the beginning of summer, and may be observed sticking in the anus ; they likewise may be observed in considerable quantities amongst the horse's dung at this time. The bott worm seems to be a fly in a chrysalis state ; for I have frequently found the outer case, or shell, open at one end, when the fly had left it.

by the frequent and strong perspiration they are exposed to, from the nature of their exercises or labour, when they are seized with acute diseases, their blood, and other fluids, are then more disposed to be thick, viscid, and inflammatory; therefore, as water is the principal diluter of the fluids in general, in such cases, a considerable quantity of it drunk at this time becomes highly necessary; and, perhaps, in some cases, it might prove the best medicine that could be given them. When they are inclined to drink, but refuse water that is warmed, I never found any bad consequences follow from indulging sick horses with cold water, after a little oat-meal was mixed with it, and giving it in a very small quantity at one time. I was once called to a horse that had got what is called a *pissing drink*, for a thickness in his legs. The drink or drench, I was informed, consisted of eight ounces of yellow rosin in powder, a table spoonful of oil of turpentine, and about half that quantity of oil of juniper, in a quart of forge water. The horse was very sick; he refused both food and water; his pulse was hard and quick, his mouth dry and parched, his legs and ears cold, his belly greatly distended, &c. He was immediately blooded; after which he was *back-racked*, that is, the dung or excrement was taken out of the rectum by the hand; in performing of this operation, the operator was sensible of uncommon heat in the body; an emollient clyster was then given; half a pailful of water, the chill taken off, was poured into his stomach, after which he seemed considerably relieved; he then staled a little, which was of a reddish colour and very thick; water was then offered him, of which he drank with more freedom; he afterwards began to stale very profusely, and which continued, with short intervals, for the space of twenty-

four hours, which reduced his flesh and strength considerably, and it was some time afterwards before he recovered either. I have sometimes met with cases attended with the above symptoms, when horses had got improper physic, or bad drugs thrown into the stomach, which I have treated in the same manner, and with success.

In the above case, it is probable, from circumstances, that the drench remained in the stomach undigested, by which it was oppressed, and its action, in some measure, suspended, by the injudicious prescription of so much rosin, as it was near double the quantity that should have been given, even to the coarsest or most robust horse; and, as the drench could not be thrown up again by the mouth, for the reason formerly mentioned, the pouring water into the stomach contributed to dilute and wash it out at the lower orifice into the intestines, where it was absorbed, and, in the course of circulation, carried by the renal vessels to the bladder; the bleeding contributed to remove the spasmodic constriction which had taken place, and the clyster was of use in emptying the intestines, and particularly the rectum, of hardened dung, which, for the most part, generally takes place in violent sickness, attended, with great internal heat of the body, and, by removing the pressure from the neck of the bladder, left it at freedom to expel its contents, which, from the colour and viscosity, appeared to have been suppressed for some time.

The same method of procedure, as I have just now observed, when horses have got improper physic that do not operate, or bad drugs that may oppress the stomach, and create sickness, will be found to give relief, only the clysters may be repeated twice or thrice, in order to empty



the intestinal canal, and forward the discharge of what has been hurtful, by the anus.

*In Cases of a Swelled Throat.*

Horses, in every period of life, are subject to violent inflammations of the glands about the throat, &c. on catching cold; but young horses, in particular, are more liable to this disorder, which is always more or less attended with a fever; at the same time, they refuse food and drink, as they cannot swallow either on account of the violent pain it occasions. This circumstance is too frequently overlooked; and as it is too generally apprehended that the horse will suffer from the want of medicine, which may be thought necessary, in this case, their heads are forcibly held up, and they are compelled to swallow whatever is poured into the throat, though with the utmost pain; and as the lungs, in such cases, are more or less affected by the inflammation extending downwards on them, whatever is poured into the mouth irritates the upper part of the larynx or wind-pipe, and occasions the most violent coughing, and difficulty of breathing, attended with trembling, cold sweats, and other alarming symptoms. In such cases, whatever is forced upon them by the mouth, whether food or medicine, does them more real injury than is generally imagined; the fever, by this means, is increased, the circulation is carried on with uncommon rapidity, attended with great internal commotion, the whole system is deranged and put out of order, and, if these symptoms are not speedily allayed, the disorder acquires strength, the powers of life are overcome and exhausted, and death soon follows.

Therefore, in sickness or distress of any kind, every thing that tends to add to the disorder, whether by oppressing the stomach with food or medicine, or causing any great commotion or disturbance in the system, ought to be carefully avoided ; a sick horse should, in every respect, be as little discomposed as possible. There is not the least necessity for exposing them to so much distress and hazard, as it is very evident, from the foregoing observations, that nourishment may, with the greatest ease, when necessary, be conveyed into the body of a horse by the anus, in the form of a clyster. This method I have always practised with success, and supported horses for several days together, when they could not take any nourishment whatever by the mouth.

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## C H A P. VI.

## O B S E R V A T I O N S

## O N

## B L O O D - L E T T I N G.

**A**LTHOUGH the method of performing the operation of blood-letting is generally thought to be pretty well known, yet there are many untoward accidents that frequently happen from the unskilful and unexperienced, in performing this operation.

As horses are naturally timorous and fearful, which is too frequently increased by bad usage, and improper chastisement, they require, in some

cases, particularly in this of bleeding, to be taken unawares, or by surprise, and the orifice made into the vein before their fears are alarmed ; for this reason, the fleam and *blood-stick* (as it is called) have been long in use, and, in skilful hands, are not improper instruments for the purpose ; although, with many practitioners, the spring-fleam would be much safer, and, on that account, ought to be preferred. When a lancet is used, the instant the horse feels the point of it, he raises or shakes his head and neck, in order to shun the instrument, before the operator has time to make a proper orifice, which frequently proves too small or too large ; for this reason, those who have tried the lancet, have been obliged to lay it aside.

Many people tie a ligature or bandage round the neck, in order to raise the vein, and that they may strike the fleam into it with the greater certainty ; but a slight view of its effects in preventing this, and its other consequences, will show the impropriety of this practice.

When a ligature is tied round the neck, previous to bleeding in the jugular veins, it is to be observed, that it stops the circulation in both veins at the same time ; hence they become turgid and very full of blood, inſomuch, that they feel under the finger like a tight cord ; and, as the parts around them are loose and soft, when the ſtroke is given to the fleam, the vein by its hardness or tightness, slips to one ſide ; of courſe it eludes the ſtroke ; hence a deep wound is made by the fleam to no purpoſe, and this is ſometimes too frequently repeated. Unſkilful people have likewiſe a cuſtom of waving or ſhaking the blood-ſtick, before they ſtrike the fleam, in view of the horſe, whoſe eye is fixed on that inſtrument, and, when they intend to give the ſtroke, they make a greater exertion ; hence the horſe, being alarm-

ed by its motion, raises his head and neck, a disappointment follows. The struggle that ensues, by this means, prolongs the operation; the ligature, at the same time, being still continued round the neck, a total stagnation of the blood in the vessels of the head takes place; and hence it frequently happens, that the horse falls down in an apoplectic fit. In such cases, I have observed the operator greatly disconcerted, and desist from any farther attempts to draw blood at that time, being prepossessed with the idea that the horse was vicious and unruly, although the very treatment the horse had just undergone rendered bleeding at this time the more necessary, in order to make a speedy revulsion from the vessels of the head. Therefore, a ligature or bandage ought never to be used till such time as the opening is made into the vein, and even then it will not be necessary at all times, if the horse can stand on his feet, as a moderate pressure with the finger on the vein will make the blood flow freely; but, if the horse is lying on the ground, a ligature will be necessary.

But farther, the concussion or shock the horse receives from his falling down in the above situation, which will always happen if the ligature is too long continued, may cause a blood-vessel within the head to burst, and death may be the consequence.

Another custom equally absurd, is allowing the blood to fall in a dunghill amongst straw, in dry sand, or in dry dust, by which means, no distinct idea can be formed of the quantity that is, or ought to be, taken away. In such cases, I have seen horses fall down in a faint from the loss of too much blood, before the operator thought of stopping up the orifice\*. For this, and a va-

\* I was witness to a case of this kind in London;—a master farrier was the operator.

riety of other reasons, which might be mentioned, a measure ought always to be used, in order to ascertain the quantity of blood that is taken away.

In pinning up the orifice, some people have a custom of raising or drawing out the skin too far from the vein, hence the blood flows from the orifice in the vein, into the cellular substance between it and the skin, which causes a large lump or swelling to take place immediately; this frequently ends in what is called a *swelled neck*; a suppuration follows, which proves both tedious and troublesome to cure. In cases when a horse may be tied up to the rack, after bleeding in the neck, pinning up the external orifice may be dispensed with; but, when a horse is troubled with the gripes, or any other acute disease, in which he lies down and tumbles about, it is necessary that the orifice be pinned up with care, in order to prevent the loss of too much blood.

As the neck or jugular vein, on the near side, is commonly opened for conveniency by those who are right-handed, the young practitioner should learn to perform this operation on both sides of the neck. This he will find, in practice, to be not only useful, but necessary, as he may frequently have occasion to draw blood from horses in very awkward situations; he will likewise find his account in it, in a variety of cases, which it is needless here to particularize.

The proper place for making the opening in the neck, or jugular vein, is likewise necessary to be attended to; for, when the cruce is made too low, or about the middle of the neck, where the vein lies deep under the muscular tegument, the wound becomes difficult to heal, and frequently ends in a suppuration, with a jetting out of proud flesh from the orifice, which unluckily, is as unskillfully treated in the common method

of cure, &c. which is, by introducing a large piece of corrosive sublimate into the wound; this not only destroys the proud flesh in the lips of the wound, but a considerable portion of the flesh around it; and, in farriery, it is called *corcing out the vein*. It frequently happens, that this corrosive application destroys the vein likewise: I have sometimes seen violent hæmorrhages follow from this cause, insomuch as to endanger the life of the animal.

The most proper place for making the opening in jugular veins, is, where the teguments are thinnest, which is about a hand-breath from the head, and about one inch below the branching or joining of the vein, which comes from the lower jaw, and which may be distinctly seen, when any pressure is made on the main branch of the vein.

In performing the operation with a fleam, the operator should hold the fleam between the forefinger and thumb of the left hand, with the second finger he is to make a slight pressure on the vein, and, before it becomes too turgid or full, make the opening; the same degree of pressure is to be continued on the vein, till such time as the quantity of blood to be taken away is received into a proper measure.

Another great error, which generally prevails in opening the veins with a fleam, is the applying too great force, or giving too violent a stroke to it, by which it is forced through the opposite side of the vein; hence, there is danger of wounding the coats of the arteries, as they generally lie under the veins, or, in some particular places, of wounding the tendons, especially when this operation is performed in the legs, thighs, &c. or in the veins, commonly called the *placæ veins*, under the breast, the consequences are frequently very troublesome to remove, and, in some cases, prove



fatal; hence, the remedy sometimes proves worse than the disease or lameness it was intended to remove. Mr. Gibson\*, in his *Treatise on the Diseases of Horses*, mentions a case of a fine horse, that was blooded in the plate veins for a lameness of the shoulder, which was followed with a hard oval swelling about the size of a goose egg; this swelling extended upwards on the breast, and likewise down the leg, attended with excessive pain, fever, deadness in the horse's looks, and all the other symptoms of a beginning mortification, which with great difficulty was prevented. I could likewise add a number of similar cases, which have fallen under my own inspection, but shall not trouble the reader with them at present.

In order to avoid the consequences sometimes attending these local operations in the breast, legs, &c. and, as horses are more or less troublesome and restless, whereby accidents of this kind may happen, it will perhaps be adviseable, in most cases of lameness, &c. to let blood from the larger veins in the neck only, where there is less danger of accidents, more especially if a spring steam is used; for, although it might be of some advantage, in particular cases, to draw blood as near the affected part as possible, yet the bad consequences frequently attending it, ought to counterbalance any advantages that may be expected from it, especially as the quantity of blood taken from the small veins is but inconsiderable, and, of course, no great benefit can be expected from it in horses when they are diseased.

The principal view in letting blood is the lessening of its quantity, by which the remaining mass circulates with more freedom in the vessel; it likewise takes off the inflammatory tendency of

the blood ; it removes spasms, &c. and prevents other bad consequences that may follow, especially in plethoric habits ; and it ought always to be remembered, that, when the signs or symptoms of a disease are taken from the motion of the blood, the disorders arising from it depend upon its circulation being either increased or diminished ; hence, therefore, all the changes which take place in the texture, quantity, and quality of the blood, are attended with a diminution or increase of its velocity.

Although the cases which may require bleeding are numerous, yet I would recommend one general caution, which is, never to take away blood but when it is absolutely necessary ; for it is a fluid that may be easily taken away, but cannot be so easily replaced ; besides the practice of bleeding frequently, or at stated times, is exceedingly improper, as it disposes the body to become lax, weak, and plethoric.

In bleeding, therefore, a due regard must always be had to the constitution, age, strength, &c. of horses, and the state or habit of body they are in at the time.

It is commonly said, that the taking away a little blood from horses, even when they are in health, or when they are in the least indisposed, *will do no harm* : this, in one sense, may be allowed to be literally true ; but why let blood from them on every trifling occasion, unless there may be such symptoms attending as may require it ? I have observed in many horses who have been very frequently blooded, and which may be easily known, from the cicatrices or marks on the neck-veins, that their blood was poor and thin, and had lost that tenacity peculiar to rich blood, together with a considerable portion of its florid and red colour. Butchers who slaugh-

tercalves, may find their account in bleeding them frequently, as it renders their flesh white, by taking away the red particles of the blood ; but in horses it is quite otherwise, as they are destined for hard labour and active exercises ; it impairs their constitutions, subjects them to diseases, and hastens a premature old age.

As the blood of horses, more especially those who are constantly employed in hard labour, or in active exercises, when drawn from a vein, appears of a darkish or deep red colour, even in the highest state of health, it is commonly said to be bad blood, and more so, when a thick yellow or buff-coloured crust forms on the surface after it is cold ; hence these appearances are said to require a repetition of bleeding ; for it very unluckily happens, that most of the diseases to which horses are subject, are thought to proceed from some impurities or *humours*, as they are called, in the blood, which require to be drained off by bleeding, and other evacuations.

With regard to any information that may be drawn from the appearance of the blood when cold, it will be found, that no certain conclusion can be formed from it, since blood that is taken from a horse who is evidently disordered, will sometimes have the same appearance, when cold, as that drawn from a horse in health. On the other hand, blood drawn from a horse in health, will sometimes have all the appearance of that drawn from one labouring under the most dangerous disease ; and this may depend on so many concurring causes, that renders it difficult to fix any precise standard how we may judge, either of the healthy or morbid state of the blood in horses when cold : as its appearances are even affected by the manner in which the operation of blood-

letting is performed, and that of the blood's being received into the vessel.

When blood is taken from a vein of a horse that is in health, it appears to be an uniform fluid, of a red or darkish colour; but, after it has been exposed to the cold air, &c. it coagulates into a stiff mass, which gradually separates the thinner parts into a pellucid serum, the thicker parts into a red or darkish mass, which is called the *crassamentum*.

Although I am thus sparing of taking blood from horses on trifling occasions, when they may be said to be in health, yet, when cases occur that do require it, I would recommend the taking away a greater quantity at once than is generally done, that is, from six to eight pounds, which will be about three or four quarts English measure, according to the urgency of the symptoms, &c. the time, strength and age of the horse considered. For, as horses are very subject to inflammatory diseases, and those that are of the spasmodic kind, and as bleeding plentifully relaxes the whole system, in these cases, the taking away a small quantity of blood, about one quart or two pounds, is in fact trifling with the disease: the horse is said to have been blooded; that satisfies his owner and the farrier; time is lost; the disease acquires strength; it will then be beyond the power of art to mitigate or to conquer it; hence the horse falls a sacrifice to timidity and ignorance. It is to be remembered, that, inflammatory diseases, (particularly when the bowels are affected), make a very rapid progress in horses, and, soon come to a speedy termination, if they are not overcome at the beginning, by bleeding plentifully, the horse commonly dies, in twenty-four or thirty hours, of a gangrene and mortification in the intestines. I have

seen so many cases of this kind, and which have been confirmed on dissecting the bodies afterwards, that I cannot be too full on the subject, in warning practitioners how they should act in such cases; and, perhaps, few occurrences in practice ever gave me more uneasiness, than to be consulted in the last stage of these complaints, when it is was evident that the proper means of checking the disorder in the beginning, had been neglected, and was then too late to be remedied.

The quantity of blood here recommended to be taken away at once, may by many, be objected to: in answer to which I would observe, that, in inflammatory cases, I have always found the greatest benefit from it in practice. And that, in some degree, it superseded the necessity of other prescriptions, by checking the growing disorder at once. The robust constitution of a horse, in such cases, can bear an evacuation of this kind, without that debility and faintness attending human patients. To corroborate what I have now advanced, I shall quote a passage from Doctor Bracken, who has been at some pains in calculating the quantity of blood that may be in a horse of a middling size. The Doctor in his first volume, page 50, says, "That it is supposed there passes through the heart of a horse 1800 times four ounces, or 450 pounds of blood in an hour. Now, the common received opinion is, that the whole mass of blood in man is about twenty-five pounds, and in an horse six times as much; and therefore, according to this allowance, a quantity of blood equal to the whole mass passes through the heart in an hour in a man, and in an hour and twelve minutes in a horse; and, from thence, it may be observed how necessary it is to take away greater quantities

of blood, in many cases, than is commonly practised; for what sensible effect can the taking away a quart of blood from a horse have upon him, if we consider that he has near 225 times as much in his body."

The blood is a fluid of a peculiar nature; it is the great fountain of life, and the source of all the humours in the body; it circulates through, and nourishes every part of the animal system, being conveyed from the heart by the arteries to the extremities and surface of the body, and returned to the heart again by the veins. This circulation is so complete, that the most trifling wound or scratch is immediately followed with a discharge of blood from the small capillary vessels of the skin. In order to explain more fully how the circulation is performed, it will be necessary to give a short description of the heart, the arteries, and veins, with some general remarks on the pulse of horses.

The heart is a muscle of a conic figure, that is, broad at its basis, and terminating in a blunt apex or point; it has four cavities, two of which are called auricles or ears, and the other two ventricles. The auricles are situated at the basis of the heart, and receive the blood immediately from the veins; the right from the vein called vena cava, and the left from the pulmonary vein; at the bottom of these auricles, are certain valves which open into the ventricles, and shut again when the latter are filled with blood, in order to prevent its return to the auricles: thus, when the right ventricle receives the blood through its auricle, the valve shuts, and the blood is forced, by the contraction of the heart, from the ventricle into the pulmonary artery, which rises immediately out of that ventricle, and is carried into the lungs; it is returned from thence by the pulmonary vein into the left auricle, which empties itself into the ventricle



on the same side, and by it the blood is forced into the great artery or aorta, which rises out of that ventricle, and which conveys it all over the body; the blood is returned to the heart by the veins (which, in their course, take in the chyle or nourishment) to the right auricle of the heart, which completes the circulation.

The heart is fixed at its basis, by the vessels, &c. which belong to it, and to the mediastinum, &c. it is contained in a bag or purse, called the pericardium, within which there is a small quantity of a clear watery lymph, separated there by the exhaling vessels, that the surface of the heart may not grow dry from its continued motion; the heart is supplied with nerves and blood-vessels for its own nourishment.

The arteries are conical tubes or pipes, which convey the blood from the heart to all the parts of the body; they possess a very elastic quality, by which they contract and dilate themselves, according to the impulse of the blood, which is propelled or forced into them by the heart: this contraction and dilatation of the arteries is called the pulse, and which takes place in all the arteries at the same instant of time; for, as the left ventricle throws out the blood into the arteries, they are dilated, and, as soon as the elasticity of the arteries can overcome the impulse of the blood, they are again contracted; hence these two causes, viz. the action of the heart, and the elasticity of the arteries operating alternately, keep the blood in a continual circulation.

The arteries being conical canals, are large at their origin, and gradually diminish towards their extremities (resembling the trunk and branches of a tree) where they anastomose, or join with the extreme branches of the veins; hence, the latter may be said to be a continuation of the arteries.

The veins, as I have just now mentioned, are a continuation of the extreme capillary arteries reflected back towards the heart, uniting their channels or branches as they approach it, till at last they form the larger veins; hence, they may be said to resemble the branches and trunk of a tree, inverted from the extremities to the heart. There is no pulsation in the veins, because the blood is thrown into them in a continued stream from a narrow channel to a wider.

In most of the veins where the blood rises in a perpendicular column, as in the legs, &c. there are valves which open towards the heart, and admit the blood to pass freely; but it cannot fall back or re-pass these valves; therefore, if it is not pushed on with sufficient force, it may distend the veins, and cause a swelling of the legs. Hence it is observed, that this lentor or sluggish circulation of the blood in the leg-veins, is removed, and the circulation greatly forwarded, by muscular motion, or, in other words, by exercise.

The veins, for the most part, accompany the arteries; hence, when a vein must be opened, it is to be remembered, that an artery is near, and, frequently, immediately under it, as large as the vein itself, (and which may be easily distinguished by its pulsation); and hence the coats of the arteries are liable to be wounded by an unskilful operator in letting blood. The extreme branches of the arteries and veins have numerous communications with one another, resembling the fibres in the leaves of plants, by which communications, the blood, when obstructed from any cause in the branchings of these vessels, may pass through by other channels that are not obstructed; this likewise takes place when the larger vessels are divided; the circulation is continued by the detached branches of the remaining veins.

These remarks being premised, it remains to

make some observations on the pulse of horses, a due attention to which is of the utmost consequence to practitioners in farriery, and which, in the general practice, seems either to be not understood, or not attended to, for, without a proper knowledge of the pulse, we neither can form a right judgment of diseases, in which the vascular system is affected, the velocity of the blood increased or diminished, neither can we judge rightly when it is necessary to let blood, nor to refrain from it. It will therefore be proper, first to consider the pulse in a healthy state, before we can form a just idea of it when a disease takes place.

The pulse of a horse that is in health, and nowise terrified or alarmed, is from 36 to 40 beats in a minute, it may easily be felt by pressing the fingers gently on the temporal artery, which is situated about an inch and an half backwards from the upper corner of the eye. It is necessary to observe, that, if the fingers are pressed too hard, (as the bone or scull lies below the artery), no pulsation will be felt, as too great pressure stops the circulation in the artery at the time. It is likewise necessary to observe, that the pulse of a horse, about thirteen or fourteen hands high, is quicker than one of a larger size. When a horse is in great pain, or in a violent fever, the pulse will be raised from 80 to 100 beats in a minute, and sometimes considerably above it.

The pulse, in a healthy state, is equal, moderate, and free, which shows that the heart and vascular system in general are firm and vigorous, and that the heart empties itself freely at each contraction and dilatation, that there is no impediment to the passage of the fluids through the viscera and vessels, and that the nervous power acts uniformly upon every part of the circulating system. Whereas, in a morbid or diseased state, it will

be unequal and intermitting every now and then, varying in the time between the strokes, as well as the force of the stroke; sometimes it will stop entirely, and sometimes it will be immoderately quick, at others unnaturally slow; sometimes it will be raised greatly above the healthy degree of strength, and at others sunk as much below it. This unequal or intermitting pulse, shows that the nervous system is greatly disordered, and portends great danger, especially if it becomes so after long illness, when the strength is much exhausted.

When the pulse beats strong and quick, it shows, that the morbid or diseased stimulus, excites the heart to expel the blood, with great force, and that the progressive motion of the blood, is more rapid and impetuous than it ought to be; as this strong pulse strains and speedily exhausts the vital powers, it portends great danger, if not soon removed.

The hard, quick, and strong pulse, is generally a symptom of considerable irritation, and shows, that the heart is greatly stimulated; this takes place in inflammations of the viscera, as in peripneumony, or inflammation of the lungs, stomach, intestines.

The hard, quick, low, or small pulse, shows great inward pain, which, by sympathetically affecting the heart, excites it to empty its ventricles before they are sufficiently filled with blood.

A quick pulse is generally a sign of a fever; when it is exceedingly quick and weak, it is always a very dangerous symptom, as it shows, that the powers of the heart are nearly exhausted, and that, in order to support the circulation, it is forced to act more frequently, and to empty its ventricles by a number of weak contractions.

When the pulse beats soft and weak, it may

be owing to a general laxity of the fibres of the arteries, or to a thin watery state of the blood, which enables it to glide too easily through the vessels, that the heart is not under the necessity of exerting so much force in propelling it through the arteries, as when they are more firm or unyielding, or when the blood is more dense or viscid, which are great impediments to a free circulation in particular organs.

A weak pulse is a sign either of a considerable debility or weakness of the heart, or too small a quantity of blood in the vessels in general, or some impediment to the influx of the blood into the heart, or to some, or all of these causes combined ; for this reason, it is to be met with frequently in low fevers, or towards the end of diseases that prove fatal.

When the pulse remains full under the fingers during the contraction and dilatation of the arteries, it is a sign of too great fulness of the vessels, either from a plethora, or too great a rarification of the fluids, by febrile, heat, or other causes ; it indicates danger from accumulation, distention, and even rupture of some of the blood vessels in particular organs. But, if the pulse, though full, is at the same time soft and distinct, it is a favourable symptom, as it shows, that there is no considerable constriction in the vessels.

Upon the whole, the pulse is always bad when it is very different from its natural state ; for, as a weak and quick pulse shows debility in the heart and vascular system, regard at the same time being always had to other symptoms, if the pulse sink in fevers there is great danger.

On the other hand, when the pulse is equal, regular, and moderately full, especially if it becomes so from being languid, weak, and irregu-

lar, on the breaking out of some critical discharge, as that of sweat or looseness, or the staling frequently, it is a sign of amendment.

From what has been observed, it will be obvious, that the information to be attained from a due attention to the state of the pulse in the diseases of horses, is of consequence in the practice of farriery. Young practitioners ought therefore to make themselves well acquainted with all the variations that take place in diseases, together with the changes that happen when deviating from the healthy state to the morbid or diseased.

It may be necessary again to observe, that in feeling the pulse of a horse in health, that he be not frightened, nor anywise alarmed, as that will make an alteration in the quickness of the pulse, which will be apt to mislead the unexperienced.

Thus much may suffice at present concerning the pulse in general ; it will be necessary to be more particular when the signs to be taken from it are applied to particular diseases, and corroborated by other symptoms, which will be mentioned in a future work. I shall therefore proceed to enumerate the different cases that may require bleeding.

The cases which may require bleeding, are in all violent bruises or strains in the muscular or tendinous parts ; in large wounds, especially when there is a laceration or tearing of the parts without much loss of blood from the wound ; in the beginning of all cuticular disorders or eruptions on the skin, as little pustules, dry scabs, &c. in large swellings on the body or legs ; in all deep punctures, or small wounds, when the horse shows symptoms of great pain, &c. in swellings of the legs and heels, from inflammations, &c.

Bleeding is necessary in most diseases where great sickness prevails, and is the speediest me-



thod of giving relief in the beginning of inflammatory fevers, to which horses are very liable; it is also necessary in all violent acute pains, as in the gripes or cholick, strangury or suppression of urine; in rheumatic complaints, where the pain causes stiffness or lameness, and which frequently shifts from one limb to another, or when it affects the neck, and occasions that stiffness and contraction of the muscles, which is commonly called the *chorus*; in inflammation of the eyes, or palate of the mouth, the latter of which is called the *lampars*, when the horse cannot eat his food on account of the tenderness of the parts; in all recent colds, attended with rheums or defluxions about the throat, eyes, &c. in recent swellings of the glands about the throat, jaws, &c. in the jaundice, inflammations of the lungs, pleura, stomach, intestines, and other viscera; in apoplexy, vertigo, or giddiness; and in all disorders where the head seems affected; in the beginning of imposthumations, or collections of matter in any part of the body, attended with great pain; in plethoric or full habits of body, where proper exercise has been long neglected; and when a horse becomes breathless on the least exercise.

On the other hand, bleeding is to be avoided, unless in very urgent cases, in all extremes of very hot or very cold weather, and whilst a horse is overheated from violent exercise; in all cases of extreme lowness of body, or weakness, through fatigue, disease, &c. after all evacuations by purging or *scouring*, diabetes, or profuse staling, loss of blood, from great wounds, or profuse sweating. Bleeding is likewise to be avoided, when imposthumations, or collections of matter is once formed properly in any part of the body; likewise during the time horses are moulting in the autumn.

Thus, I have endeavoured to show the princi-

pal cases where bleeding is necessary, and likewise where it ought to be avoided; no doubt, particular cases and accidents may, besides those above mentioned, happen, when bleeding may be necessary, but these, from what has been said upon the subject, will readily occur to the judicious practitioner.

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## C H A P. VII.

## O B S E R V A T I O N S .

## O N

## R O W E L S .

**R**OWELS, for horses, answer the same purpose as issues in the human body; the method of introducing them is by making an incision through the skin, about three-eighths of an inch long, and then separating the skin from the flesh with the finger, or with a blunt horn, all around the orifice, as far as the finger will easily reach, then introducing a piece of leather, very thin, shaped round, about the size of a crown piece, having a large round hole in the middle of it; previous to introducing the leather, it should be covered with lint or tow, and dipped in some digestive ointment; a pledget of tow, dipped in the same ointment, should likewise be put in the orifice, in order to keep out the cold air: the parts around it soon swell,

which is followed with a plentiful discharge, from the orifice, of yellowish serum or lymph; and, in two or three days at most, the discharge turns into thick gross white matter: the rowel is then said to suppurate.

These artificial vents act by revulsion or derivation; and hence they become of great use in many cases, as they empty the surrounding vessels by a regular flow discharge of their contents, and are even of great service when there is a redundancy or fulness of humours in general, which may require a gradual discharge, in preference to greater evacuations by purging medicines, &c. Rowels should be placed (especially in some particular cases) as near the affected part as possible; and, at all times, they ought to have a depending orifice, in order to admit of a free discharge of the matter that may be contained in them.

The parts where they ought to be inserted, and where they are found to answer best, are the belly, inside of the thighs, the breast, and outside of the shoulders and hips; they are sometimes, but very injudiciously, put in between the jaw-bones under the root of the tongue, where they never come to a proper suppuration, on account of the constant motion of the parts in eating, &c. neither do they answer any good purpose from being placed in that situation. In some disorders it is found necessary to put in several of them at once, in order to make a sudden revulsion from the parts affected; but this should be determined by the horse's age, strength, and circumstances that require them.

But, though rowels are found very beneficial in some cases, yet like a number of other operations common to horses, they sometimes, by the improper use of them, become hurtful to the constitution, and, in some diseases, they frequently,

instead of suppurating, turn gangrenous ; hence, the cure proves worse than the disease they were intended to remove ; thus, in violent fevers, where they are frequently very injudiciously applied, they never suppurate properly : whether this proceeds from the quickness of the pulse, together with the violent rapidity with which the fluids in general are then carried through the vessels, or from the violent agitation in which the whole system is thrown, it is difficult to determine ; but experience confirms the observation, when properly attended to. In such cases, the surrounding parts, where the rowel is placed, seldom or never swell, (as in the ordinary course, when they suppurate properly), but appear dry, or much in the same state as when they were first put in, there is little or no discharge from the orifice, and the little that does come is thin, ichorous, and bloody. In such cases, they ought to be taken out immediately, and the parts well fomented with a strong infusion of chamomile, or an emollient poultice applied, if it can be properly fixed, and frequently repeated ; at intervals, the parts ought likewise to be bathed with ardent spirits, as that of wine, turpentine, &c. covering the parts from the external air ; and, providing there is no fever at the time, two or three ounces of Peruvian bark may be given through the day, either made into balls, or given in a liquid ; and this continued till the threatening symptoms are removed.

Rowels are of great use in carrying off rheums, or defluxions from the eyes ; in great swellings of the glands, &c. about the throat and jaws, which threaten a suffocation ; or when the head seems particularly affected, as in the vertigo, or staggers, apoplexy, &c. &c. in recent lameness ; swellings of the legs and heels, attended with a discharge of thin ichorous matter, &c. in large and

sudden swellings in any part of the body; or when extravasations of the fluids have taken place, from blows, bruises, &c. or when a horse has had a severe fall, &c. and in a variety of other cases, which will occur to the judicious practitioner.

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## CHAP. VIII.

## OBSERVATIONS

## ON

## SETONS.

SETONS are of great use in carrying off matter from deep seated tumors, or abscesses in different parts of the body; they ought at all times to be used in preference to making deep incisions into the muscular parts, which not only disfigure horses, but such deep incisions are very difficult to heal up in them, on account of the situation of some of those tumors, and the horizontal position of the body, which is unfavourable in many cases for procuring a depending opening, in order to carry off the matter, as in tumors on the back, *withers*, and the upper part of the neck, immediately behind the ears, which are very common. Besides, the horizontal position of the body, the natural restlessness and impatience of horses, renders it impracticable to fix proper bandages on these elevated parts; the situation of them likewise will not admit of proper

dressings being fixed on them with any degree of certainty of their remaining for any length of time; by which means, the openings made into such tumors or abscesses are frequently left bare, and exposed to the cold air, &c. hence, such openings degenerate into very foul ulcers, and produce a great deal of proud flesh, which requires to be repeatedly cut away with the knife, as the strongest caustics that can be applied are not sufficient to keep it under.

Setons are introduced by long, thin, sharp-pointed instruments, or needles, shaped like a dart at the point, and having, at the other extremity, an eye to receive the end of the chord, which is to be left in the tumor. The size of the instrument may be determined by that of the tumor, and the thickness of the chord which is to follow it, and which at all times ought to be smaller than the perforation made by the point of the needle. Every practitioner in farriery should always have a number of these needles by him, of different sizes, that is, from six to fourteen or fifteen inches long, a little bended on the flat or under side. The following is the method of applying them in cases of tumors, &c. When the matter is found to fluctuate in the tumor, the needle, armed with a chord at the other end, is to be introduced at the upper part of it, and the sharp point of the instrument directed to, and brought out at, the under or lowermost part of the tumor, including the whole length of it; or, if needful, through the sound muscular flesh on the under part, in order to procure a depending orifice for the matter to run freely off; the chord should be dipped in some digestive ointment, and then tied together at both ends with a thread, in order to prevent its slipping out; but if, from the length of the perforation, the chord should



not admit of being tied together at the ends, a small button of wood, or some such substance, may be fixed at each end; only, from this circumstance, the chord will require, when shifted, occasionally to be drawn upwards and downwards; whereas, when the ends of it are tied together, it forms a circle, and may always be shifted downwards to the lower orifice; when the matter in the tumor appears to be wholly discharged, or dried up, and no thickness appearing but where the chord is, it may then be drawn out, and the orifices suffered to heal up.

When the needle for introducing the seton is to pass near to any large blood-vessels, or nerves, in order to prevent the chance of their being wounded, it may be concealed in a canula or case, open at both ends; and, after an opening is made at the upper part of the tumor, sufficient to admit the needle, with its case, it may then be directed, with safety, to pass the blood-vessels, &c. it may then be pushed forward through the canula to the opposite side of the tumor, and, having only the common teguments to perforate, all danger will be avoided.

The common method of treating those large tumors, which are seated on the upper part of the neck, immediately behind the ears, generally known by the name of the *pole-evil*, and those which are seated on the *withers*, or upper parts of the shoulders, is exceedingly improper; they are either allowed to break of themselves, or are opened the whole length of the tumor on the upper part; in this situation, especially in the *pole-evil*, when the head is always kept in an erect position, the matter contained in the tumor cannot be discharged from it, but is retained in the bottom of the wound, and exposed to the external air, &c. it soon acquires a most ichorous

corroding quality, and produces one of the largest and the most sordid fistulous ulcers that horses are infested with ; a great quantity of fungus, or proud flesh, is soon produced ; this requires to be repeatedly extirpated with the knife, the loss of which cannot be again supplied ; hence the horse is greatly disfigured, the cure becomes both tedious and uncertain, and is seldom radical. In some cases, I have known the vertebrae of the neck affected by the sharpness of the confined matter, forming lodgments there, and, after great trouble and expence, the horses were put to death.

All these kinds of tumors, &c. are easily and speedily discussed by the use of setons, as above described, without any loss of substance, or disfiguring of the parts, and cured with the greatest certainty when the operation is properly performed. Of a number of cases, in my practice, where this operation has succeeded with great expedition in curing these tumors, I shall only mention the following.

About eight years ago, an Arabian horse, belonging to a gentleman in this place, had a large tumor seated a little to one side of the *withers*, or upper part of the shoulder ; it was forwarded by applying emollient poultices ; and as soon as the matter was perceived to fluctuate in the tumor, a large seton needle, armed with a chord at the other end, (as prescribed above) was introduced at the upper part of the swelling, and brought out at the under or lowermost part of it ; the matter was discharged at the lower orifice in a very short time, the tumor was by that means soon discussed, and in a few weeks, it was entirely healed up, without any scar or blemish remaining, farther than a little baldness about the lower orifice, occasioned by the sharpness of the

matter, which likewise soon disappeared, and not the least trace of the disorder remained.

The other case happened about nine years ago : a coach-horse (belonging to a nobleman in the neighbourhood) had a large tumor a little behind the ears, on the neck, which I have formerly observed is called the *pole-evil*; the tumor extended to both sides of the neck, and was divided in the middle by the mane; the tumor had been opened on one side, in a very superficial manner, by a farrier in the country, before the matter in it was sufficiently digested; after applying a few emollient poultices, in order to ripen it, a strong seton needle, as already described, was introduced at the upper part of it, almost close to the mane, and, after passing it through the bottom of the tumor, which was very deep, the needle was brought out through the sound muscular parts below the tumor, in order to procure a flowing or depending orifice for the matter to run freely off.

The same operation was likewise performed on the opposite side, beginning near the mane, and finished in the same manner. In a few weeks the cure was completed. The horse run for several years in the nobleman's carriage, without the smallest vestige of his former disorder.

From this method of treating these tumors, together with the use of alterative medicines, &c. which, in cases of this nature, ought never to be omitted, they were entirely discolled, and the perforations made by the needle soon healed up, without the least deformity of the parts. I have therefore given the history of these cases, to show with what facility and expedition such tumors may be carried off, by the use of setons in preference to the common methods used, and even recommended by different authors; such

as, after opening these tumors by deep incisions, and pouring into them the most corrosive mixtures, made scalding hot, together with a long tedious course of hot irritating applications, by which the poor animals are kept in the utmost torture for a considerable time, and, in the end, are so disfigured by the loss of substance, occasioned by the cutting away so much of the flesh from the parts, that such horses are generally rendered unfit for any thing but the meanest drudgery.

Deep seated abscesses are cured in the same manner by the use of setons; after tracing the sinuses or cavities of the abscess with a long slender blunt lead probe, (which yields easily without forcing its way through the cellular membrane, or taking a direction between the interstices of the muscles), the needle, armed with a chord, should follow the direction of the sinews or *pipes* (as they are commonly called) to the most depending part; and, in case there should be two or more sinuses, which sometimes happens, each of them should be treated in the same manner, in order as I have frequently observed, to obtain a depending orifice for a free discharge of the matter, and which, being once procured, seldom fails of completing a cure.

## C H A P. IX.

### O B S E R V A T I O N S

#### O N

## P U R G I N G H O R S E S.

**P**URGING medicines are given to horses with different intentions, that is, either to prepare

their bodies for active exercises, or to cure them of diseases. In the first case, they are always to be considered as in a state of health; in the second, in that of disease.—Previous to entering on these different heads, and that they may be the better understood, it will be necessary to premise a few things relating to the stomach and intestines, the chyle, the different systems of vessels, with their contents, which will serve to illustrate what may be advanced on the subject of purging horses.

The stomach of a horse, notwithstanding his size of body, is but small, and its coats are thin; the numerous circumvolutions and foldings of the intestines, are wisely ordered, to detain the aliment till such time as it is thoroughly drained of its nourishing particles by those vessels called the *lacteals*, the office of which is, to absorb or drink up, and to convey the chyle or nourishment into the blood; their mouths open into the inner cavity of the intestines. The length of the alimentary canal, from the upper end of the gullet to the anus or fundament, is said, by Doctor Bracken to be about 35 yards. The intestines have a motion peculiar to themselves, which, from its resemblance to that of a worm, is called *peristaltic* or *vermicular*; according as this motion is increased or diminished, the evacuation by stool or dunging, is in a great measure regulated.

The stomach is supplied with a humour or juice peculiar to itself, which, by mixing with the food, as the saliva, bile, and other juices, supplied by the pancreas, &c. undergoes a fermentative process of a peculiar nature, which is called digestion, and from which the chyle is the result.

The inside of the intestines are covered with a slimy mucus, which is separated from the glands, in order to preserve them from being irritated by the gross food, in its passage backwards. The coats of the stomach and intestines are supplied with an infinite number of blood-vessels and nerves, which are every where dispersed; and hence they are exceedingly liable to inflammation, irritation, spasms, &c.

Besides the vascular system, which includes the arteries and veins, there may be said to be another system of vessels, called *absorbents*; they are of two kinds, the lacteals, and the lymphatics. The use of the former has been already mentioned. The lymphatics are tubes or canals, furnished with valves, which convey fluids that are taken up by absorption on the external surface, and from the extremities of the body; they likewise absorb particular fluids from the different cavities of the body, and from the cellular parts, &c. which are by them conveyed into the thoracic duct, where it is mixed with the chyle, and from thence it is carried into the blood.—Let us now consider the manner in which purging medicines operate on the first passages only.

The action of purging medicines consists in irritating the sensible fibres of the stomach and intestines, by which means, not only the peristaltic motion of the latter are considerably quickened, but also the secretions of mucous and lymphatic juices, and vapour, which ouze every where into the cavities of the intestines, are increased, together with unusual quantities of pancreatic juice and bile from their several sources; hence it will be obvious, how great a quantity of the soundest humours, or even the chyle that is derived from the food, before it is mixed with the blood, may be carried off by purging medicines, and how



much the whole mass of fluids, in general may be decreased and drawn off.

Since, therefore, purging is occasioned by giving such medicines as are found, by their irritating quality, to stimulate the coats of the stomach and guts, and, at the same time, quicken the peristaltic motion of the latter, so as to cause them to shake or throw off their contents by stool: it would appear, that the different kinds of purging medicines differ only in degrees of strength, and that they operate no otherwise upon the different humours of the body than as they stimulate the first passages more or less, and hence cause a greater or lesser evacuation by stool. So that, by this operation, we only lessen the quantity of the fluids, and clear or scour the first passages from any offending matters that may be lodged there. From hence it may likewise be inferred, that there is no such thing as elective purgation, that is, by giving certain medicines, we drain off this or that particular humour from the body. This may be farther illustrated in the following case or example: when a horse, who has swelled legs, or greasy heels, gets purging medicines, they do not act immediately on the fluids contained in the legs, by carrying them off only, they act by revulsion, that is, by drawing away the fluids, &c. from the stomach and intestines; those that are in the legs are, at the same time, absorbed or drawn away from the extremities by the absorbent vessels, to supply the want in the former; and hence the swelling in the legs, &c. subside.

It is a common phrase, when a horse is any way out of order, to say, that such a horse is *foul in the body*, or that he is full of humours, an expression which can only mean that the horse is in a bad habit of body; as to a horse's being full

of humours, the propriety of the expression in this sense cannot be admitted, as every horse, even in the highest state of health, properly speaking, is full of humours, as every gland in the body, of which there are a considerable number, separates a particular humour, which becomes necessary for a variety of purposes in the animal oeconomy; thus, the liver separates the bile, the testicles the semen, and every joint in the body has its glands, which separate a particular humour, and so of others. Therefore, the expression or phrase of a horse's being full of humours, in the common acceptation of it, is improper, and betrays a want of knowledge of the animal oeconomy.

Many people are but too fond of giving purging medicines, and frequently prescribe them without considering whether the case may require them or not. Doctor Bracken has a very pertinent remark on this head: “\* This sort of evacuation,” says he, “seems very much to quadrate with the outward senses, and makes the ignorant part of mankind (whose heads are fuller of humours than their horses) imagine, that purging medicines carry off the offending matter in most disorders, never considering the general rule, which ought still to be kept in mind, viz. That, in proportion to any one evacuation's being heightened or increased, most, or all of the other natural evacuations, are proportionally diminished.”

It is a practice with many people, to rouse their horses very hard before they give them purging medicines, in order, as the phrase is, to stir up the humours, that, when they are afloat, (according to their ideas) they may be carried off by the purging. It has been already observed

\* Vol. I. page 86.

how exercise operates on the circulation of the blood, by increasing its velocity to a great degree, and hence inclining it to an inflammatory disposition, which, in this case, is the very worst thing that could happen, upon the supposition that the horse is in a bad habit of body; for purging medicines, when they are given in this state, may occasion inflammation in some of the principal viscera or intestines; or they may bring on a fever, or other disorders, which, if they do not prove mortal, yet they may, as is sometimes found to be the case, occasion those disorders that terminate in blindness, incurable lameness, or in some chronic disorder, which may render the horse useless.

Riding horses about, the day after they have got purging medicines, in order to forward their operating, if continued too long, till the horse is warm, or to produce sweating, ought always to be guarded against, as such treatment not only exposes them to catch cold, but hinders the operation of the medicine in the ordinary way; for it has been observed, that purging medicines sometimes go off by sweat, or by urine, which the ignorant and unskilful are not acquainted with; they therefore conclude, that, as they see no great discharge of dung, the dose has been too weak, and another given too soon, without allowing a proper interval between them, which at the same time is made considerably stronger than the former, which weakens the horse very much, and a considerable time elapses before he recovers his usual strength.

I have already taken notice of the great length of the the intestines; this, together with the horizontal or prone position of the body of a horse, is unfavourable to the operation of purging medicines, which, on that account, remain

in the intestines a considerable time before they operate, being from 18 to 28 or 30 hours, according to the state of the bowels at the time, and, in some constitutions, even longer. In these cases, it is not adviseable to give any medicines in order to quicken or hasten their operation; walking exercise, but not long continued at a time, together with plenty of warm water, if the horse will drink, is the best and the safest means to forward their operation. At the same time, it will be necessary to notice whether the horse stales more than usual, as purging medicines, as I have just observed, are found sometimes to operate in that way, without any considerable evacuation by dung. I would likewise recommend one general caution in giving purging balls, which is, that the operator should push the ball over the root of the tongue, and that he be certain of the balls being swallowed entire, and not broke or thrown out of the mouth; mistakes of this kind have frequently occurred when the ball breaks, one-half, perhaps, is only swallowed, the other drops out of the mouth, or it may happen, that the whole ball drops out unperceived. In these cases, it is concluded, from the purge's not operating in due time, that it has been too weak, and, therefore, the next dose is made considerably stronger, and hence a superpurgation ensues, attended with great sickness, loss of strength, and other bad consequences; therefore, when purging balls are given to horses, the head should be kept up, and care taken that the ball passes down the gullet, which may easily be discovered sliding down from the outside: but, if any doubt remains of its being swallowed, a little water may be given the horse to drink, and one glut or two will put it out of all doubt.

It is a common practice to give purging balls

early in the morning, upon an empty stomach; this, in some constitutions, occasions great sickness, faintness, trembling, griping pains, &c. a long while before they begin to operate; to prevent which, I have always ordered, and with success, a mash of bran to be given about an hour or more before the ball, which prevented these effects; at the same time, the purge operated in the most gentle and easy manner; and, perhaps, this practice would be adviseable in all cases, and in all constitutions, when purging medicines are necessary.

Another error many people fall into is, that although a purge operates very well, yet, if the horse is not very sick during its operation, they conclude that it will have no effect, nor be of any benefit to the horse, they therefore give the next purge made a good deal stronger, in order, as they say *to stir up the humours*; for they conclude, that the sicker a horse is under this operation, the humours are the more stirred up, and the easier carried off by the purge, without considering the danger that attends this operation, and how much they expose the life of the horse by such injudicious treatment.

When purging medicines are intended to be given to horses, it is necessary that they should be kept quiet and at rest for some time before, that is, from any very violent exercise, and the same rule should be observed for some days after their operation is over, walking exercise only excepted. It is owing to the want of these, and such like precautions, already mentioned, that so many accidents happen daily in the purging of horses.

It may be now expected, that I should make some observations upon the practice of purging horses, by way of preparing them for running,

hunting, &c. It must be acknowledged there is a difficulty in combating a practice which too generally prevails, although there are a number of facts which will serve to demonstrate, that the purging of horses indiscriminately is not necessary in order to prepare them for these active exercises. On the contrary, it must, and indeed is, in many cases, exceedingly hurtful to horses, on account of the too frequent repetition of them, together with the too short intervals generally allowed between each purge.

It is well known, that horses, by good feeding, regular exercise, &c. may be brought to perform the most active exercises, and that many instances daily occur of horses both running and hunting, without undergoing any previous preparation by purging medicines; and it is likewise well known, that, even when purging medicines are given, still regular exercise is found to be absolutely necessary, in order to habituate the horse to this kind of active labour.

Post horses likewise furnish a further proof of what has been advanced; it is well known how they can be brought to travel very long stages, and with great speed, without any preparation farther than good feeding, and inuring them by degrees to this violent labour. Dr. Bracken, who understood this subject very well, and who was likewise a great sportsman, has been at vast pains in exploding this manner of reasoning, by a variety of sound arguments, in his second volume of *Farriery Improved*, where he has likewise given it as his opinion, "That, in most cases, good feeding, regular exercise, &c. will, in time," says he, "make a horse fit to start for a plate, without so much noise of the virtue of this or that drug or composition to carry off grease, and mend his wind; for, in my humble



opinion, the jockies are too fond of giving purges to horses, whereby they weaken their constitution, by causing the fibres of the stomach and guts to become lax and flabby." And, in the same volume, he mentions the following case of a mare of his own, "That, he had run six years with only two purges; neither," says he, "had she an ounce of any kind of medicine during that time, except every morning, and mostly every evening, about the bigness of a pigeon's egg of my cordial ball; and, I fancy, she performed as well as the most of her neighbours, for she won eight plates out of nine, and four out of six every year."

As to the vulgar opinion of humours falling down into this or that particular part of the body, if horses are not properly purged, &c. before they are put to these active exercises, it is exceedingly erroneous, and must depend on a variety of circumstances, that ought to be taken into the account.

It may be of use to the young practitioner, to explain what is meant by the phrase of *humours falling down*; but, at the same time, I must inform him, that this phrase is so generally in use, that, when a horse's eyes are affected, the humours are said to fall down into them, although they are situated nearly in the most elevated part of the body. But, to explain their falling down to the extremities, I shall take a case that frequently occurs: when a horse that is in the highest state of health, but too fat and full of juices, &c. and accustomed to stand much at rest, is suddenly put to violent or long continued exercises, his legs, &c. will be apt to swell soon thereafter; they will perhaps continue in that state for some time; they may at last break out in running sores about the heels, and form cracks, scabs, &c. &c.

in this situation, it is then said that the humours have fallen down to the legs. Here a question naturally occurs, Where were these humours before the horse got this hard ride, or other severe exercise, and how come they to fall down on this occasion only? This requires a different explanation.

It has been observed, in the chapter on exercise, the effects it produces when too sudden and violent, before a horse is gradually habituated to it for some time previous to his undergoing such violent or long continued exercises. All the vessels being then too full of fluids, they, from the force and rapidity of the circulation during the exercise, especially the finer capillary vessels, admit the grosser fluids that do not usually circulate in them; they likewise are liable, in these cases, to rupture; hence the fluids they contained are extravasated into the cellular parts, where they stagnate, and being then out of the course of circulation, they occasion a swelling. If this happens in the legs, as they are the most depending parts of the body, (*the humours are then said to be fallen down*), the swelling causes a distension of the skin, &c.; the cuticular pores are then enlarged, and admit through them the thinner parts of the fluids to the outward surface on the skin, which, on being exposed to the external air, are then changed in their quality, and acquire, according to circumstances, either a soapy, clammy, or greasy appearance, or a sharp foetid ichorous quality, that erodes the skin, and, by lodging there, form small ulcers.

It ought always to be remembered, that great evacuations weaken an animal body, and, if they are repeated too frequently, and too close upon one another, without allowing a proper interval between each, or, if they are carried to excess,

which is sometimes the case, the weakness in the animal system is thereby increased, the powers of life are quite overcome, and death follows of course.

I would not be understood, from what has been said, to mean, that purging medicines are never to be used on these occasions—No, I am fully sensible of their good effects, when judiciously administered, and horses properly managed during their operation; but I do not approve of repeating purge after purge, merely because this or that horse is to run or hunt, without first considering whether the animal be fat or lean, or whether he has been kept at hard meat, with proper exercise, or whether he has run a considerable time, or late in the season at grass; all these, and a number of other circumstances necessary to be attended to, ought to be duly weighed, and maturely considered, before purging medicines are administered; for example, if a horse has run long at grass, and is of a plethoric or full habit of body, evacuations by purging, and diuretic medicines, to a certain degree, are necessary, together with length of time, good feeding, and regular exercise, to bring his body into that proper habit to enable him to perform, with freedom, such active exercises. But, if a horse is of a lean, low, or dry habit of body, whether it may proceed from the want of proper food, from fatigue, &c. why reduce him still lower by repeated evacuations of any kind? There is such an inconsistency in this practice, that it would not even deserve to be mentioned, or taken notice of, if it were not much practised every day; for, with some people, it is no matter of consideration with them what state or habit of body a horse may be in, that is, whether he be of a fat, or full, or lean dry habit of body, still he is said to be

full of humours, and which must be purged off before he is fit for hunting or running, &c. Horses, in the latter situation, require only good feeding, and regular exercise, to strengthen and improve their constitutions, which cannot fail of taking place, if the viscera are sound, and the horse otherwise in a healthy state. And, even although a horse should be a little inclined to the full, or what is called the plethoric habit, yet, from the use of diuretic medicines, which are commonly given on these occasions, together with regular airings and proper exercise, good feeding, dressing, &c. he may be brought into that proper habit of body, which will enable him to perform the most violent labour with the greatest ease to himself, and without any bad consequences arising from it.

But, farther, from the too frequent use of purging medicines to horses, their constitutions, though otherwise good, are ruined by it, their strength is impaired; it likewise contributes to shorten their days. Besides, it frequently happens, that, when they are brought to action too soon after such evacuations, their strength being quite exhausted by the treatment they have undergone, they fail in performing what was expected from them.

From these, and a variety of other arguments which might be urged, and which will readily occur to the judicious reader, it is obvious, that repeated evacuations, of any kind, are not necessary to horses, in order to prepare them either for running or hunting; and, if those that are intended for the latter were allowed only the spring-grass, and taken up about the middle or towards the end of June, before the grass becomes too rank, although it may be rather inconvenient to have them in the house at that sea-

son, yet the owner would find his account in it; the allowance of oats may be but small for some time, and which might be increased, together with the horse's exercise, as the hunting season approached. Running horses might be treated in the same manner, according to the season in which they are to run, allowing both a greater length of time in the habitual practice of these exercises, together with proper feeding, dressing, &c. This treatment, together with the use of those alterative and diuretic medicines, which are usually given on these occasions, would render horses much stronger and fitter for these active exercises, without wearing out their constitutions by the repeated use of purging medicines, too frequently very injudiciously administered.

I shall close this head with a case that happened here some years ago: two military gentlemen betted their horses to run against one another on Leith sands, for a considerable sum, and which was to take place three weeks after the bet; the horses to be rode by their grooms. Captain R——'s was a poney about  $13\frac{1}{2}$  hands; Captain M——'s was a gelding about 15 hands high; both their grooms were bred at Newmarket, and were keen advocates for bleeding and purging, (notwithstanding both the horses had been kept on dry food and in the best order, and the short interval of time for such treatment) in order to prepare them for running. Captain M——'s horse was blooded once, and purged twice; Captain R——'s was blooded once, and purged once; they were both sweated in the stable with a great load of cloaths; at the same time, their stables, though separate, were kept uncommonly hot and close shut up, night and day, in the midst of summer. From this treatment, they soon lost their appetite for food, and, in about

eight or ten days, they were hardly able to undergo their exercise on the sands, their strength was so much exhausted by the treatment they had undergone, the constant and violent sweating in the stable, which, of all evacuations, when continued, weakens a horse the most. In this situation, Captain R—— gave up his bet as lost, together with his poney, for which he had a great value; luckily for him, however, his groom, who was rather inclined to be corpulent, had put himself under a course of physic, &c. in order to reduce his weight; the poney was then put under my care, with another groom to attend him; his cloathing was immediately reduced to a single rugg, the stable-windows were thrown open in order to admit fresh air, the poney recovered his appetite for food, together with strength, spirits, and activity; whilst his antagonist continued under the manner of treatment above mentioned. And, although bets were considerably against the poney at starting, yet he won with great ease, and which Captain R—— frankly acknowledged was entirely owing to the difference of treatment they had been under.

I have hitherto confined my observations on the administering purging medicines to horses in health, in order to prepare them for active exercises, as running, hunting, &c. it remains to consider their use in diseases.

It would take up too much of the reader's time to enumerate the various forms of prescriptions that are in use for purging horses, or to confute the ridiculous encomiums bestowed on the variety of recipes that are handed about with a *probatum est*, or attestation of their peculiar virtues in carrying off this or that particular humour, &c. as many of these compositions, when examined, appear to be a confused jumble of ingre-



dients, calculated more for the apothecary's profit, than benefit to the patient; and the bad effects arising from them in practice, are too apparent in a variety of cases which occur daily.

The substances that are used for purging or emptying the alimentary canal, may be distinguished into two kinds, the lenient which open the belly gently, and the drastic which purge more briskly. The lenient ought always to be preferred when there appears any unusual commotion in the vascular system, which may easily be known from the quickness of the pulse, &c. for, although purging medicines increase the motion of the pulse during their operation, yet they afterwards abate or lessen the motion of the blood, by drawing off a considerable quantity of the animal fluids by stool; they likewise clear the intestines of sharp stimulating matters or worms, which occasion an usual degree of irritation in the system; they likewise may be given with different intentions, as circumstances may require, in small doses, to keep the body open, and prevent an accumulation of faeces or dung in the intestines, which happens in diseases. In cases of frequent returns of gripes or cholic, but not during the fit, lest the guts should then be inflamed, they should therefore be given in the intervals, in order to prevent the return of the complaint.

But, in cases where it is thought necessary to clear the intestines thoroughly, in strong robust horses, the drastic purges may be given, providing there is no great commotion in the circulation of the blood at the time. Purging medicines are of great service in cases where the intestines appear to be loaded with viscid or thick slime, or when it appears, by long continued costiveness, that the peristaltic motion of the intestines is in some degree suspended; in gross habits,

especially where there is any tendency to swellings in the legs, attended with running sores, &c. in dropical swellings in any part of the body; in diseases of the head, rheums, or defluxions about the eyes; in rheumatic lameness, when the pains seem to move from one limb to another; in the jaundice; in obstinate coughs, especially when the horse is of a full habit of body; in most cutaneous diseases, or when a number of small pimples or lumps arise on the skin, and suddenly disappear again, or when the lumps discharge a sharp fluid of an ichorous quality; in plethoric or full habits, when the horse is intended for violent or active exercises, as running, hunting, &c. in cases where it is judged necessary to lessen the general mass of fluids, or to divert them from flowing to any particular place in too great a quantity, as in inflammations of the lungs; in this last case, liquid purges are most proper, as they operate more expeditiously. In very delicate constitutions, rhubarb should constitute the greatest part of their purging medicines; they are likewise most proper in cases of want of appetite; no doubt there may be other cases where purging medicines may be necessary; but these must depend on the discretion and judgment of the prescriber.

On the other hand, it will be prudent to avoid giving purging medicines during extreme cold weather; likewise in all feverish complaints, when the pulse beats strong and quick, till such time as these symptoms are considerably abated; in all cases of extreme weakness, whether arising from fatigue or long continued diseases; in all lean dry habits, unless there is reason to apprehend it proceeds from worms; in cases of very obstinate costiveness, till such time as that complaint is in

some degree removed by clysters, soft feeding, &c. in cases when a horse labours under any violent acute complaint; in diarrhœa or looseness. Aloetic purges, or those in which aloes enters into the composition, are to be avoided likewise in severe cholics or griping pains, although liquid purges, that are quicker in their operation, and less irritating, may be given with safety in the intervals, when it is observed that horses are subject to frequent attacks of this complaint.

Previous to the giving of purging medicines to horses, especially to those who have been kept on hard meat, it will be prudent to keep them from all violent exercises for some days before the purge is given. If they are fat, and of a full habit, it will be necessary to draw some blood, to lower their feeding, and to give them that which is soft and relaxing, as boiled barley, mashes of bran, malt, &c. When horses are to be purged at grass, no preparation is necessary, farther than in plethoric or full habits, to treat them as above, observing, at the same time, that they be not costive, as this frequently happens, although feeding on grass; in that case, they are to be taken into the stable, and treated as if they had been on hard feeding.

In giving purging medicines to horses, it will always be most prudent to begin at first by giving mild lenient purges, in order to find out the strength of the constitution, &c. as very strong robust horses, to appearance, are sometimes easier purged than those of a more delicate make; and it frequently happens, that the same horse is easier purged at one time than at another, according to the state of the stomach and intestines at the time the purge is given.

Mild purges are therefore much safer at all times, and of more benefit to the constitution, than too strong ones; for the latter cause too

great an irritation of the stomach and bowels ; hence follow griping pains, great sickness, &c. and sometimes inflammation of the intestines ; they likewise may occasion a superpurgation, by which the bowels are so much weakened, that they never afterwards recover their former tone ; and hence follow loss of appetite, general weakness, and, perhaps, an habitual diarrhoea or looseness.

When it is intended to give mercury with purging medicines, which is necessary in cases of worms, or as an alterative, it is proper to give the mercury in the evening, and the purging-ball the next morning, as formerly directed. In this case, great care should be taken that the horse be not exposed to cold, nor suffered to drink very cold water, although he may be indulged with plenty of water, milk-warm, mixed with a little oatmeal.

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## C H A P. X.

## O B S E R V A T I O N S

## O N

## C L Y S T E R S.

CLYSTERS administered to horses, are of greater importance in relieving them from many acute complaints, than is generally imagined ; and it were to be wished, that in place of the more expensive cordial drenches, &c. which are

but too frequently given in most of these cases, a simple clyster of warm water, or thin water-gruel, were substituted in their stead; the latter of which would prove of great benefit, whilst the former too frequently proves hurtful.

Clysters serve not only to evacuate the contents of the intestines, but also to convey very powerful medicines into the system, when perhaps it is not practicable to do it by the mouth; for although clysters are only conveyed into the large intestines, and, perhaps, hardly penetrate into the smaller, still they are extremely useful, by fomenting as it were the latter, and, at the same time, by softening the hardened excrement that is accumulated in the former, and rendering it so soft as to be expelled out of the body, by which flatulencies or other offending matters, that may be pent up in them, are likewise expelled; besides, by their warmth and relaxing powers, they act as a fomentation to the bowels; and hence may be of considerable service in removing spasmodic constrictions in the bowels, carrying off flatulencies, and in preventing inflammation in the intestines, &c. or, by conveying opiates to the parts affected, give speedy relief in cholics, &c. &c.

The use of emollient clysters in fevers are considerable, they act by revulsion, and relieve the head when too much affected; besides, by throwing in a quantity of diluting liquor into the intestines, it not only relaxes and cleanses them, but may be said to cool the body in general; at the same time, a considerable portion of the liquid is absorbed and conveyed into the mass of blood, by which means it is diluted; and, in particular complaints of the bowels, clysters give almost immediate relief, these remedies, when judiciously prescribed, pass directly to the

parts affected, as they undergo little or no alteration from the powers of the body. Doctor Sydenham \* esteemed clysters so much in fevers, that he affirms he could quiet the too great heat of the blood in the human body at pleasure, by the use of them only ; those he recommended were extremely simple, generally composed of emollient decoction and sugar, and sometimes only of water, or of water mixed with an equal quantity of milk.

Van Swieten, in his Commentaries, vol. v. page 371, on the use of clysters to the human body, observes, That “ clysters cherish the bowels like an emollient vaporous bath, wash out the fæces, dilute what is absorbed by the venal orifices, and resolve the concreted humours, by the saponaceous virtue which resides in sugar and honey ; and thus, by all these powers conspiring together, they allay too great motion of the humours.” Hence, therefore, as the diseases of horses are cured on the same principles as those of the human body, the doctrine laid down by physicians for the cure of diseases in the latter, are applicable to horses in similar circumstances ; only it ought to be observed, for obvious reasons, that the intestines of horses should always be emptied of dung by the repetition of clysters, which have something stimulating in their composition, previous to the administering any kind of medicine by way of clyster.

Nor is the use of clysters confined to medicines only ; food and nourishment may be conveyed into the system in this way, when a horse is unable to swallow any thing by the mouth. This I have frequently experienced in practice, and supported horses for several days together by nou-

\* Sect. I. cap. iv. page 69.



rishing clysters, made of thick water-gruel, during violent inflammations or tumors in the throat, till such time as they have been discessed or suppurated.

Those who are not acquainted with the anatomical structure of the body, will no doubt be surpris'd at this doctrine, for the instruction of whom, I would remind them of what has been said on this head in the chapter on food, where it is observed, that the lacteal vessels, whose mouths open into the inner cavity of the intestines, absorb or drink up the chyle or nourishment that is produced from the food, and convey it into the mass of blood. The same process takes place when nourishment is conveyed into the intestines by the *anus* or fundament, only the food requires to be so far prepared, broke down, and diluted with water, so as to render it fit to be absorbed by the vessels mentioned above.

In administering clysters, it ought always to be observed, that the contents of the clyster be neither too hot nor too cold, and only milk-warm, as either of these extremes will surpris'e the horse, and cause him to eject or throw it out before it has had time to have any effect; previous to introducing the clyster-pipe, the operator, after anointing his hand and arm with oil, butter, or hog's-lard, (observing at the same time, that the nails of his fingers are short,) may introduce it into the rectum, and draw out the hardened dung gradually. This operation, in farriery, is termed *back-racking*, and becomes the more necessary, as it frequently happens that great quantities of hardened dung is collected in the rectum, and which, in some cases, the horse cannot void easily without assistance of this kind.

The composition of clysters should be extremely simple, on that account they will be easily pre-

pared, and as easily administered, if the operator is provided with a suitable instrument for the purpose. The generality of clyster-pipes that are commonly used, are by far too small and too short; although it may appear a kind of paradox, yet it is a fact, that a clyster-pipe of a larger size than the ordinary ones, and of a proper thickness, is much easier introduced into the anus, than one that is considerably smaller. It is likewise obvious, that, when the pipe is too short, it renders clysters of no use, because it cannot convey them so far up into the intestines as is necessary to give them any chance of being retained; a small short pipe of six or eight inches long, is not capable of conveying the injection to the end of the rectum, which, in a horse of a middle size, is about sixteen or eighteen inches long. I have frequently observed, in giving injections with these short pipes, that the clyster flowed out at the anus, in proportion to the force with which it was injected from the bag or syringe; this must always be the case, especially if the bladder should happen at the time to be full of urine, which frequently occurs, from its being too long retained there by the hardened dung in the rectum pressing down upon the neck of the bladder, and which prevents the horse from staling.

But farther, after the hardened dung is taken out of the rectum by the operation above mentioned, the bladder being distended and full of urine, it cannot exert its contracting power immediately, so as to expel its contents; it therefore presses up the empty rectum, and forms as it were a kind of tumor in it; if the pipe is too short, it cannot reach beyond this rising in the rectum, which forms as it were a declivity back towards the anus; and hence the liquor regurgi-

tates or flows back as soon as it is discharged from the pipe.

The smallness of the bag or bladder, which is generally proportioned to that of the pipe, is another very material objection to these small instruments, as it seldom contains one quart of liquid; from which circumstance, very little benefit can be derived from the use of them in such large intestines as that of a horse. Doctor Bracken, in his first volume, page 203, has a very judicious remark on the use of clysters; he observes, That “the colon of a horse seems to be three guts, by reason of the two necks of about half a yard each, is drawn up into many cells or purses, by means of two ligaments, one of which runs along the upper, and the other the under side of it, which, with the assistance of a valve or flap at its beginning, hinder the excrements either from returning back into the small guts, or falling too soon downwards, before the chyle or milky substance prepared from the food be sent into its proper vessels. And, indeed, the caecum or blind gut, which is the first of the three larger guts, seems to be so contrived in the manner of a valve, to hinder the aliment and chyle from passing too soon into the colon; for, if the aliment and chyle were not in some measure hindered in their passage through these large guts, the body could not be sufficiently supplied with nourishment.

“The first of these colons is about a yard and a half in length, the second about a yard, and the third, or that part which joins the rectum or arse-gut, near six yards in length; so that the colon of a horse fourteen hands high, may be said to be nearly eight yards and a half long; and, from it, along the rectum or straight gut to the anus, where the excrements are discharged, is

not above half a yard ; so that it is plain, clysters operate mostly in the colon ; tho' I must say they are given in too small quantities ; for what signifies two quarts of liquor in a gut nine yards long, and four or five inches diameter, in a natural state ; but, in a colick, it is so distended with flatulencies, that its diameter exceeds seven or eight inches, as I have frequently observed in those dying of that distemper."

Large metal syringes are frequently used for the purpose of giving clysters ; but of all the instruments ever invented, in my opinion, they are the most improper for horses ; the shortness and smallness of their ivory pipes, are not only a material objection against the use of them, but they are apt to tear and wound the gut ; for, if a horse should prove restless, either from pain, as in cases of the gripes, or from viciousness, the syringe and pipe being quite inflexible, in the struggle to throw up the injection, the gut may be wounded or hurt, by which a discharge of blood and other bad consequences may follow. But, although there was not the least chance of their hurting the horse, or wounding the gut, yet the force with which they throw up the liquor, always causes a surprise, of course a resistance, attended with a vigorous effort to throw it out, which indeed frequently happens before the pipe of the syringe is withdrawn and frequently upon the operator.

The most proper instrument for the giving of clysters, is a simple bag or ox-bladder, which will hold two or three quarts, tied to the end of a wooden pipe about fourteen or fifteen inches long, one inch and an half diameter where the bag is tied, and of a gradual taper to the extremity, where the thickness should suddenly increase, and be rounded off at the point, and made as

smooth as possible; the perforation or hole through the pipe may be made sufficiently large, so as to admit the end of a common funnel, for pouring in the liquor into the bag. By the flexibility of the bladder at the end of this instrument no danger can happen to the horse; the clyster is conveyed so far up into the intestines that it will be retained; it causes no surprise (providing the liquor be neither too hot nor too cold, but milk-warm), as no other force is required to throw it up, than the holding the bag a little higher than the level of the pipe; by which means, the liquor flows gently into the gut, without any surprise to the horse. After using the bag, it may be blown full of wind, a cork put into the pipe, and hung up in some dry place, to prevent it from rotting; by which means, it will last a considerable time.

Clysters are distinguished by different names, which denominate the quality of the ingredients of which they are composed, as emollient, laxative, diuretic, anodyne, &c. As the more general use of clysters, in the practice of farriery, would be attended with the most salutary effects, especially in acute diseases, where the speediest assistance is necessary, I shall here subjoin some forms of recipes for composing them, together with the cases in which they may be administered with advantage.

*Emollient Clyster.*

- R. i. Two or three quarts \* of thin water-gruel.  
Sallad oil, and  
Course sugar—of each six ounces.

\* English measure is always meant.

Dissolve the sugar in the water-gruel, then add the salled oil—Give it milk-warm.

*Laxative Clyster.*

R. 2. Two or three quarts of thin water-gruel,  
Glauber salts eight ounces,  
Salled oil six ounces.

When Glauber salts are not at hand, common salt may be used in its stead.—A great variety of recipes might be added for making clysters, composed of the infusion of different herbs, seeds, &c. but, as the above ingredients are always easily got, they will be found to answer all the intentions required under this head, which is to soften the hardened excrements, to lubricate the intestines, and, by exciting a gentle stimulus, promote a free discharge of their contents, which, when once obtained, seldom fail of giving relief in inflammatory cases, spasms, &c.

*Purging Clyster.*

R. 3. Infuse two ounces of fenna in two quarts of boiling water, strain it off, then add Syrup of buckthorn,  
Common oil,—of each four ounces.

This clyster will operate more briskly than the former, and, on that account, may be preferred when an immediate or speedy discharge is necessary.

*Anodyne Clyster.*

R. 4. The jelly of starch, or infusion of lintseed, one pint, liquid laudanum, one ounce, or about two table spoonfuls.



When there is reason to apprehend inflammation in the bowels, opium may be given in place of laudanum, from 20 to 30 grains, in proportion to the urgency of the symptoms; it ought to be well triturated or rubbed in a mortar, with a little of the liquid, till it is thoroughly dissolved. The smallness of the quantity of liquid here recommended, gives it the better chance of being the longer retained, as the good effects to be derived from the opium depend entirely on this circumstance. This clyster is proper to be given in violent gripings, attended with purging, in order to blunt the sharpness of the corroding humour, and to allay the pain usually attending in such cases. The starch will in some measure supply the deficiency of the natural mucus, or covering of the intestines, which has been carried off by violent purging; it may be repeated, if the symptoms continue violent, only diminishing the quantity of laudanum, or of the opium.

*Nourishing Clyster.*

R. 5. Thick water-gruel three quarts.

When clysters of this kind are found necessary, they may be given four or five times in the day, according as circumstances may require; they are of considerable service in cases where the horse cannot eat sufficiently to support himself, nor swallow any thing, from inflammation of the throat, jaws, &c. or in convulsions, attended with a lock'd jaw, &c.

*Diuretic Clyster.*

R. 6. Venice turpentine, two ounces;

Castile Soap, one ounce; dissolve the soap in two quarts of warm water, then add the turpentine, after it has been well beat up with the yolks of two eggs.

This diuretic clyster is of great use in the strangury, and obstructions in the urinary passages; and, as it is immediately applied to the parts affected, it seldom fails of giving relief, and has a much better effect, when prescribed in this manner, than when given by the mouth, as it then mixes with the whole mass of fluids, it may lose a considerable portion of its diuretic quality before it reaches the kidneys; but, by being administered in the form of a clyster, it is readily absorbed by the neighbouring vessels, and promotes a free discharge of urine.

It would be needless to add more forms of clysters, as those above mentioned will answer most cases, without any material alteration, but what may be easily supplied by the judicious practitioner.

There are a variety of cases where clysters may be administered with great success, besides those already hinted at, as in inflammatory fevers, spasmodic constrictions, and colicky complaints in the bowels; in recent coughs, apoplexy, convulsions, paralytic complaints, swelling of the belly, whether from air pent up in the bowels, or from hardened excrements; in cases where horses are troubled with worms, as the ascarides which lodge in the lower part of the intestines, or when botworms are observed sticking in the anus, or voided with the dung; in very coltive habits, before laxative or opening medicines are given by the mouth; in wounds which penetrate deep into the muscular or tendinous parts, or in the belly, &c. in inflammation of the eyes, or when the head seems particularly affected; in inflammatory swellings on any part of the body, when a horse cannot swallow any food, &c. whether it proceeds

from spasm in the muscles of the throat, inflammations, or swellings. Clysters composed of mucilaginous substances, as starch, lintseed, &c. are of great benefit in violent diarrhoeas or looseness, whether it proceeds from a natural discharge, or from too strong purging medicines.

It ought always to be remembered, that clysters should be repeated frequently, till such time as the disorder for which they are given is either removed or greatly abated. This injunction may be the more readily complied with, as the administering clysters to horses is not attended either with much trouble or disturbance to them.

Before I conclude this chapter, I would make one observation, which is this; it frequently happens in colicks, and other complaints in the bowels, that a horse will dung frequently, probably from pain, &c. but in a very small quantity at once; at the same time, what he passes may appear softish or loose. In such cases the practitioner may be told that clysters are unnecessary and superfluous; this, however, ought not to prevent him from prescribing them, as, in such cases, the flatulencies which occasion the disorder may be seated in the colon, where the excrements at the same time are extremely hardened; and it frequently happens, that, after the second or third injection, they are discharged in such a quantity, and in such a state, as to surprise those who were just before deriding the giving clysters. I have frequently had these prejudices to combat with, for farriers frequently have as troublesome nurses to deal with, as the physicians sometimes complain of, and who are no less ready in their insinuations where they are attended to.

## C H A P. XI.

## O B S E R V A T I O N S

## O N

## DRINKS OR DRENCHES.

**I**T has been the practice amongst farriers to distinguish their formulae of medicines, or *recipies*, as they are called, by the titles of cures for particular diseases; and this practice has been too much followed, even by authors who have treated on the diseases of horses. Hence it happens, that many people if they can but distinguish one symptom which is said to attend any particular disease, immediately apply to their receipt-book for a cure, without troubling themselves any farther in investigating the cause, the nature, and the various symptoms attending different diseases, that have a resemblance to one another; hence, very gross mistakes too frequently happen. Thus, I have known pleuritic complaints taken for the colick or gripes, on account of some of the symptoms in the latter that are likewise attendant on the former complaint, and treated according to that pernicious method too much followed in cases of colick, by giving hot irritating medicines, ardent spirits, &c. &c. till the mistake has been discovered when too late to admit of a remedy. The only symptom that is common in the two cases now mentioned, and which are in some respects similar,

is that of the horse's lying down frequently, and rising up suddenly; but there are other symptoms which distinguish the one from the other, and may easily be perceived by an attentive observer; for instance, pleuritic complaints are more or less attended with a short troublesome cough, which colick pains are not. It ought, therefore, to be a general rule with every man who takes it upon him to prescribe medicines for the diseased, to consider every symptom with the greatest attention, and to compare them with those that are in any respect similar in other diseases; and, when he has carefully compared them together, he will be able to make a proper distinction, and, in a great measure, to determine the true seat of the disease, so as that he may apply the proper remedies. At present I shall not prosecute this subject farther, as it will fall to be treated more properly under the head of the different diseases.

As the method of giving drinks or drenches to horses is generally understood, I shall only observe, that great care should be taken to compound them properly, and not to mix drugs of opposite qualities, which do not unite or mix intimately together. From not attending to this circumstance, the drenches which are frequently given to horses, are so very nauseous and disagreeable, that they will not swallow them; on this account, they are rejected and spit in the administering, or, when swallowed with reluctance, they occasion such a nausea or sickness, that they too frequently increase rather than alleviate the complaints they are intended to remove. Thus, when balsams are administered, if they are not properly blended with some mucilaginous substances, they swim entire on the surface of the liquid in which they are given; and hence they are pour-

ed into the mouth in their original form, the pungency of which irritates the membranes of the mouth and throat, and occasions violent coughing, they are spilt in the struggle, and the horse may prove shy afterwards to take any thing that is forced upon him in the form of a drench; all rough substances, hot spices, ardent spirits, wines, powders, &c. produce this effect when they are not properly compounded; and I have frequently known pieces of solid gums, as large as a walnut, forced upon horses in a drench, from the prescriber's not knowing how to dissolve, or neglecting to reduce them to a powder. Venice or common turpentine (when good of its kind) is frequently prescribed to horses with success, when properly prepared; yet, when they are given in substance, without any other preparation than being reduced into a fluid state by the heat of the liquid in which they are given, prove extremely disagreeable by their sticking about the mouth and throat, and occasioning violent coughing. The same observation holds with respect to other balsams, &c. Thus, by the injudicious compounding of drugs, the most powerful medicines may be rendered of no effect, whilst the poor animals fall a sacrifice to ignorance, and are deprived of that assistance to relieve them under their various diseases, which it is in the power of art to give.

The proper time of administering drenches is likewise of great importance, and, indeed, on this circumstance, in a great measure, depends the whole success in practice; for, however well adapted the compositions may be at a certain particular period of a disease, to remove or to mitigate it, yet, in certain cases, the very administering of medicines in form of a drench proves hurtful, particularly when the throat, jaws, &c. are sore, swelled, and inflamed, the forcing a drench on a



horse in this critical period is followed with the most violent symptoms; and I have frequently observed a simple solution of nitre in water, sweetened with honey or molasses, given in the above cases, occasioning the most violent coughing, trembling, panting, &c. insomuch, that the poor animals were like to drop down, merely from the acute pain they suffered from administering any thing by way of a drench in this critical period; the very position a horse's head is put in to receive a drench in these cases, creates to him the most exquisite pain, from the distension the muscles of the throat, &c. undergo, when the head is held up by force, at a time when these muscles, &c. can hardly bear to be touched by the fingers even in the gentlest manner.

From what has been now observed, it will be evident how highly imprudent it is even to attempt the giving food or medicines by way of a drench in these cases, till such time as the swelling, inflammation, &c. are abated; and even then no medicines should be given but such as are of the emollient kind, and, at the same time, well blended with mucilaginous substances, as the infusion of lintseed, solution of gumarabic, or the yolks of eggs, as these substances sheath or blunt the pungency or sharpness of the drugs that are administered.

As all herbs, seeds, &c. of vegetables, yield their virtues readily to water, they should be infused in that which is boiling, and the thin parts drained off for use; balsams should be incorporated with mucilages; gums should be powdered or dissolved; and all drenches should be made as agreeable as possible, and sweetened with molasses or honey.

## C H A P. XII.

## O B S E R V A T I O N S

## O N

## B A L L S.

**B**ALLS for horses are similar to the pills that are administered to the human body, and are intended to convey those substances in that solid form into the stomach, which cannot, (or at least is not proper) to be done in the form of drenches.

What has formerly been observed with respect to drenches, may likewise be applied to balls in the general practice of farriery; they are distinguished by the appellation of cures for such and such diseases, and too frequently given with as little caution; the same consequences follow as upon the misapplication of drenches; and hence, errors in practice too frequently occur in prescribing them.

Balls should be made of an oval shape, and about the size of a small egg, but longer, and conveyed over the root of the tongue by the hand. To perform this operation with ease to the horse, the operator's fingers should be extended and surrounding one end of the ball, the whole hand and thumb must be contracted inwards, in order to occupy as little space as possible, the ball is then to be pushed over the root of the tongue;

the smaller the hand is, the ball will be given with more ease, both to the horse and the operator. In order to prevent the fingers, &c. from being hurt by the teeth, an iron instrument covered with cloth (which is known to most grooms under the denomination of a *balling iron*) is put into the fore-part of the horse's mouth, which keeps it at a proper wideness, having an opening of an oval form, sufficient to admit the operator's hand and arm; at the same time, the tongue should be drawn a little down, and held to one side by the other hand, and kept close to the under jaw, which position contributes greatly to facilitate the operation; the instant the ball is delivered, the tongue must have its freedom, as it is necessary in the action of deglutition. I would here caution the operator, that he does not pull the tongue too far out of the mouth, without pressing it down upon the lower jaw, and keeping it in that position by grasping the jaw at the same time; for, if he holds the tongue single by itself, as horses are apt to struggle much in these cases, he may hurt the tongue considerably, instances of which have occurred by such practices; or the muscles of it may be so much strained as to prevent the horse from swallowing any thing but with the greatest difficulty for some considerable time afterwards.

The administering of medicines in the form of balls is preferable in most cases to that of drenches, as the operation of giving them, when rightly performed, gives the horse no fatigue; the dose prescribed is conveyed with certainty into the stomach, without any diminution or loss of its quantity.

Farriers have one great advantage in administering medicines to horses, viz. That, if they are properly compounded and adapted to the dis-

case, once they can convey them into the stomach, they cannot be thrown up again, the stomach not possessing the power of vomiting. From the same cause, on the other hand, the effects of hurtful or injudicious prescriptions must be pernicious in their consequences.

In compounding balls, after the ingredients are properly prepared, they must be made into a stiff paste, by the addition, if necessary, of balsams, syrups, mucilages, molasses, or honey, the mass then divided into one or two balls of a proper size, according to the dose prescribed. It is likewise necessary, when they are to be kept for any length of time, to have them tied up in a bladder, and rolled in some dry powder, as flour liquorice, &c. in order to prevent them from sticking together.

It is common to make up large quantities of balls for horses in too great a mass at once; this requires attention; for, if great care is not taken that the different ingredients are thoroughly incorporated with the general mass, they will be unequally divided, too great a proportion of one ingredient being in one ball, and too little in another; therefore, when any prescription that requires nicety in the dose is recommended, every ball should be made up separately, with the exact quantity prescribed in each, as in purging balls, &c.

## CHAP. XIII.

### OBSERVATIONS

#### ON

### DIURETICS.

**U**NDER this head are included those medicines whose most remarkable properties ap-

pear in their increasing the discharge by urine, or which are said to remove obstructions in the urinary passages.

They are supposed to lubricate or soften the fibres which compose the urinary glands and canals, and, by their attenuating and deterfive properties, rarify and thin viscous or thick humours, so as to render them fit to pass through these canals, which they could not do in a viscid state; but, whichever of these ways they operate, it is well known that they are of singular use in promoting the discharge by urine, by which diseases are not only frequently carried off, but actually cured with expedition; and, in many cases where purging medicines are prescribed, diuretics would be much more preferable, as they may be used with greater safety, more especially when it is considered that the chief effects of either of these prescriptions tend only to lessen the quantity of fluid in the body. Hence it will appear how salutary and beneficial medicines of this kind are to horses in a great variety of cases, but more particularly in those where any obstruction has taken place in the urinary vessels, attended with difficulty in staling, a complaint which horses are very subject to, owing to a variety of circumstances. From this consideration, it will likewise be obvious how necessary it is to allow horses, which are upon a journey or travelling long stages, to stand still at times, in order to let them make water; from a neglect of this kind, many horses are killed; for, when the bladder has been overful, and distended beyond its natural dimensions, it turns paralytic, and loses the power of contracting itself again for some time, so as to expel the urine immediately; hence dangerous symptoms ensue, which, if not speedily relieved, prove fatal. Besides, when the urine is too long retained in the bladder, it is not only re-absorbed or taken up

again into the mass of fluids, but, by stagnating, it becomes thicker, the more watery parts being carried off first by absorption, the more gross and earthy parts remaining behind, and the tendency which these particles have to concrete, may promote the formation of gravel, &c.

Diuretic medicines are most frequently administered in the form of balls, but, in some circumstances, they may be given in the form of powders in the horse's food. Nitre is not only an alterative, but it acts as a powerful diuretic to horses, and, in some cases, may be given from one to four ounces a-day, according as circumstances may require.

To coarse horses, or those of robust strong constitutions, from one to three or four ounces of yellow rosin in powder may be put into their food, and repeated two or three times, at proper intervals, according as it is found to operate in cases of swelled legs, greasy heels, &c. and it ought always be observed, that, when diuretic medicines are given, the horse should be indulged with plenty of water to drink during the time of their operation.

The cases which require diuretic medicines, and which occur most frequently, are when any difficulty is observed in a horse's making water, or when liable to frequent attacks of the strangury, or suppression of urine, when the urine appears too thick, turbid, or discoloured, whether it be red, yellow, or black; when there are symptoms of any latent disorder, attended with a dullness or heaviness in the horse's looks, a staring dusty like coat, local swellings on any part of the body, as on the belly, sheath, or legs; running sores about the latter, commonly called the grease, &c. in cases where there are eruptions or pustules on the surface of the skin, or when



the horse appears itchy, and frequently rubbing himself against the stall, &c. or in rubbing one leg against the other, although no eruption appears on the skin; in running thrushes, cracks, or ulcers about the heels; in baldness, or losing the hair on different parts of the body; in most cases where a course of diuretic medicines are prescribed, bleeding will be necessary before they are given. Regular exercise must by no means be omitted, even during the time they are operating. The use of diuretics should not be continued too long at one time, as they weaken the body considerably, and, as soon as the disorder for which they were given is removed or abated, they should be left off.

## C H A P. XIV.

### OBSERVATIONS

#### ON

### GIVING MEDICINES AS PRESERVATIVES OR PREVENTATIVES.

**H**AVING formerly made a few remarks on the caution that is necessary in giving medicines at certain times of sickness or disease; I shall now make a very short observation relating to the practice of giving horses medicines whilst they are in health, by way of preventing diseases; a practice which, probably, has originated from a similar custom in use amongst the human species, in taking medicines as preservatives or preventatives, without any knowledge of their medical

qualities, only because the practice has the sanction of custom.

If a man or a horse is in a state of health, what more is required, or how can they be made better; health is the most proper state of an animal body, and it is not in the power of medicine either to make it better, or to preserve it in the same state. A good medicine given seasonably, when there is an appearance of some latent disorder, or some derangement in the body, which would, in a short time, occasion its breaking out, may prevent it from taking place, by carrying it off. The same medicine given in a state of health, will produce an alteration in the system, by increasing or diminishing some of the natural secretions, or disturbing the animal functions; or, even allowing that it did not produce any of these changes, still it leaves the body just as liable to the impressions of disease as before. Besides, the custom of giving medicines too frequently is a bad one; they become habitual to the constitution, which renders them totally inefficacious, when necessary, or, at least, their effects are greatly impaired. This is but too visible in many of the human species, who indulge themselves in the pernicious custom of drinking drams; hence, what in certain cases would prove a cordial, loses its effect upon them. And there are but too many examples of people who have contracted the habit of taking medicines under the titles of stomachic cordial, &c. &c. who have injured their health, and impaired their constitutions, though otherwise naturally strong. Many arguments might be drawn from the analogy that subsists between the human body and that of a horse, to show the impropriety of the too frequent or injudicious exhibition of medicines to horses whilst they are in health, and the pernicious

ous effects which arise from this practice, can hardly escape the notice of any but those who are blinded with prejudice.

The medicines which are commonly administered to horses, by way of preservatives or preventatives, are generally composed of hot powders, aromatics, spices, &c. together with a number of other ingredients of the like qualities, under the denomination of cordials, &c. these are said to heat and invigorate the stomach, and thereby promote digestion. But, if a horse is otherwise in health, this desirable end is brought about in a much more natural way, by a moderate wholesome diet, and regular labour or exercise, or, in other words, by proportioning the food to the labour or exercise which the horse undergoes.

There are likewise more powerful, and indeed more efficacious medicines, that are too frequently given to horses in health, under the title of alteratives, which prove of great benefit, when properly prescribed, in disease; although at the same time, it ought to be observed, that they should never be given but when there is an appearance of some latent disorder.

By alteratives are understood the giving of certain medicines, which are said to change the humours or juices of an animal body from a morbid or diseased state to that of health; they have no immediate sensible effect, but gain gradually on the constitution, and are followed (if the viscera are sound) with the most salutary effects, by promoting the natural secretions which had been retarded or obstructed in their progress through the pores of the skin: but, in this case, a disease is implied, and of course, such things may be necessary.

The medicines given under the denomination of alteratives, are antimony in its different prepara-

tions, mercury, sulphur, aloes, and salts. The former of these, especially the coarser kinds, are generally given too frequently, in too great quantities, and in too gross a state, which sometimes brings on great sickness, or violent purging; and, in some constitutions, in place of promoting the cuticular secretions, &c. they occasion a great heat and dryness of the skin, which is frequently succeeded with a number of hard lumps, or with blotches, on different parts of the body. Sulphur not only opens the body gently, but it readily makes its way through the pores of the skin, and therefore it ought to be used with caution, as horses are very apt to catch hold upon the too liberal use of it, which may occasion a worse complaint than it was intended to remove. Aloes given in small quantities, by way of an alterative, and too frequently repeated, as is sometimes the case, weakens the stomach and bowels, so as to bring on a lax, or what is called a watery habit of body; it ought therefore to be prescribed with caution to delicate horses, and only given to coarse robust horses, who are of a full habit of body, and newly taken from *late* grass, or that have been accustomed to foul feeding, as grains, boiled chaff, &c.

Salts, especially sal nitre, sal prunel, or common salt, are the best and safest alteratives that can be given to horses; they seem to agree with their constitution, with this advantage, that they require no clothing nor confinement during their operation, nor is the free use of them attended with any of the above disadvantages. But, at the same time, it would be absurd to prescribe them without some apparent cause. Nitre is of great service in all inflammatory complaints; it not only allays the great heat of the blood, which is common on these occasions, but it is an anti-

dote against putrefaction, to which the fluids of an animal body, in the end of these complaints, are greatly disposed; it likewise promotes the natural secretions, particularly that of urine, and is one of the best and the safest medicines that can be given to horses on such occasions. Common salt given to horses, which do not appear to thrive when there are no symptoms of an inflammatory disease, has a very good effect; it promotes digestion, and the natural secretions; it makes them take on flesh and *coat well*.

I would not be understood to prohibit the moderate use of antimony as an alterative; I have only hinted at the bad consequences on giving the coarser kind ill prepared, and frequently as injudiciously prescribed. The antimony that is coarse and black like gun-powder, should always be rejected. The best antimony is ponderous, and composed of long shining streaks like needles; it ought always to be levigated into the finest powder.

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## C H A P. XV.

### OBSERVATIONS

#### ON

#### MOULTING OR CASTING THE HAIR.

**F**ROM a variety of circumstances observable about horses towards the end of autumn and beginning of winter, it would appear, that some

particular change seems to take place in their constitutions, which, at the same time, is attended with a degree of faintness or weakness peculiar to that season. This may arise from a variety of causes combined together; but the principal one, I apprehend, may proceed from that of moulting; for, although horses in general do not cast their coats of hair at this season as they do in the spring, yet, as a considerable change takes place on the thickness and length of their hair at this period, it may properly be called their moulting season. The Count de Buffon in his third volume, page 379, says, That "horses of all colours, like most animals covered with hair, moult or cast their hair every year, commonly in the spring, and sometimes in the autumn; as they are then weaker than at any other period, they require more care, and should be more plentifully fed." As this observation of the Count's is in the general, and not limited to any particular climate or country, I shall just offer a few hints on the appearances which attend the moulting of horses in Great Britain, with the diseases that prevail at this period.

It would be tedious to particularize the various situations in which horses may be kept, fed, and worked, &c. and to take notice of their cases separately, and the diseases that may follow on the difference of treatment they may be exposed to; the hints that are here offered may suffice at present, as they may lead to farther discoveries and improvement in the knowledge of the diseases of horses at this period.

As those horses that are kept in warm stables, and well fed through the winter, are hearty and vigorous in the spring, when the season is gradually turning milder and warmer, their moulting at this season is not attended with that faintness, &c.



to which they are liable on their moulting towards the end of autumn. The reason of this is obvious; the food of horses in the spring is dry, and free from all superfluous moisture, of course, it then produces richer and better nourishment; hence, they are more lively, active, and vigorous; to which cause may likewise be added the change of the season which then takes place, and which is more agreeable to their constitutions, and contributes greatly to cheer and enliven them.

But, towards the end of autumn, it is very different with the generality of horses, and even with those that are kept in the best manner, but more especially with those who have been fed with new hay, new grain, or with late grass, and, at the same time, compelled to undergo severe labour, or active exercises; such food, at this season, abounding with too much water, produces less nourishment, and fills the vessels with what may be called a superfluity of watery fluids; this cause alone will produce a general laxity of the muscular fibres of the whole body; and in this last case, it increases that languor and weakness which so generally prevail during the time of moulting.

It is observed, that those horses who are kept in warm stables, and well fed, moult early in the spring; those that run abroad at grass moult much later. But, if the former should be exposed to cold winds or rain for any length of time together, by being turned out to pasture, or from their being in any shape exposed to cold weather, after they have once moulted, or cast their winter coat, that their hair will then grow thicker and longer, the same as it does in the beginning of winter, and continue so till the season turns milder, or that they are kept in warm stables; in this case, such horses may be said to have moulted twice in the spring.

The coldness, chilliness, and moisture of the

weather, which commonly prevails at this season in Britain, may likewise be added as another cause, which contributes to increase this general disorder, by occasioning a constriction of the pores of the skin; for it is observed, at this period, that the hair of the generality of horses stares or *stands on end*, (according to the stable phrase;) at the same time, their skin commonly feels dry and hard, or what is called *hide-bound*; and notwithstanding they, for the most part, sweat most profusely when they are put to any hard labour, or active exercises, merely through weakness, and the laxity that then prevails in their constitutions; yet that natural insensible perspiration, as it is called, which always takes place in a healthy state through the pores of the skin, and which occasions or produces that shining, glossy, and smooth appearance on the skin and hair, seems at this period to be almost suspended; in such a situation and circumstances, they are disposed, upon any irregularity in the management of them, to fall into diseases of various kinds, more especially those which proceed from obstructed perspiration; from this general constriction of the pores of the skin, that fluid which ought to pass off by insensible perspiration, is retained in the body; hence, the quantity of fluids in the vessels being increased, these, together with the general relaxed state of the muscular fibres through the whole system, derange the circulation; hence proceed those swellings of the legs, &c. so common at this season, and which is frequently attended with running sores, or what is called greasy heels, &c. &c.

Horses who have got the early spring-grass, and afterwards are kept on hay, with a good allowance of grain, and daily accustomed to moderate exercises, suffer no material injury from moulting in the autumn, farther than their be-

ing more liable to catch cold at this time, from the alternate changes they are exposed to, viz. being kept in warm stables, and, perhaps, in body cloths, and suddenly exposed to the chilliness and moisture of the weather when they go abroad, and before their coats of hair have grown sufficiently to resist the cold.

Horses, who run at grass through the summer, and whose bodies are fat and full of fluids, if exposed to active or laborious exercises, are liable to many diseases about the time of moulting, as the interval from the time they are taken from grass, and the moulting, is too short to admit of their bodies being brought into that particular habit necessary to enable them to perform these exercises with safety to themselves; they fall into that languor, &c. peculiar to this season; and, if suffered to stand in the stable too much at rest, the habit of body they are in disposes them to fevers, disorders of the lungs, swelling of the legs, glands about the throat and jaws, and running sores about the former, neither are they able to undergo common exercises, without being more than ordinary fatigued and jaded.

Those horses who run at grass through the summer and autumn, are still in a worse situation, they are not only more liable to the diseases above mentioned, from the very lax habit of body they are in at this time, but less fit for active exercises of any kind, and require a longer time, even with the utmost care and attention, to bring their bodies into that state in which they may undergo active exercises with impunity. This period, in particular, proves critical with them, and, if laborious exercises are persevered in, they generally fall a victim to disease.

It very unluckily happens, that, in the situation above mentioned, the means commonly used

to render the bodies of horses fit for active exercises, or to carry off the appearance of disease, as swelling of the legs, &c. are evacuations of every kind, such as bleeding, purging, rowels, diuretics, &c. &c. at the same time, these prescriptions through impatience of the keeper or owner, are hurried on with too great a precipitancy, that would even affect a horse in the soundest state, and most hardy habit of body, at any season, and reduce him to great weakness; the moulting comes on, which still adds to it: in these circumstances, the constitution receives such a shock, as even that of a horse cannot resist it; hence many of them fall a sacrifice to this treatment, and, if they should survive, they are attacked with some lingering chronic disorder, which renders them a burthen and expence to their owners.

The end of autumn likewise proves very severe on those horses whose flesh and strength are exhausted from continued hard labour, or violent exercises, as posting, &c. through the summer and autumn; when the moulting comes on in this low spiritless state of body, it carries off great numbers of them, that by proper care in moderating their labour, together with good nursing, and feeding them with rich boiled food at this time, their lives might be preserved. Such soft nourishing food becomes the more necessary for horses of this description at this particular period, in order to support them under the moulting, as the ferous or watery parts of their fluids having been drained off by the violent perspiration they were exposed to, their muscular fibres are then too rigid, and the blood too thick, for circulating so freely as it ought to do through the fine capillary vessels; hence they are disposed to fall into those disorders which proceed from this cause.

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Many of those horses that are thought to be wore out from posting, &c. at the end of autumn, when they come to be fed with boiled food, or with potatoes or carrots, and continued so through the winter, recover surprisingly. This last mentioned food recovers their flesh; it renews their fluids in general, and promotes all the natural secretions; it operates on them nearly in the same manner as the spring grass; it purges them gently on the first use of it, and corrects the whole habit. On changing their food to that which is hard and dry, as oats and beans, and increasing their exercise gradually towards the spring, they soon become fit for the most active exercises, without any previous preparation from medicine.

This season likewise proves destructive to aged horses; when the green food is exhausted, they are then obliged to feed on hard dry food; in some, the digestive powers may not only be weaker, but the teeth, at the same time, may be defective, in not breaking down the hard food so minutely as it ought to be, in order to render it fit for digestion, and the nourishment of the body. Cases of this kind have occurred in my practice, from which I conclude, that horses are sometimes subject to disease in their teeth, resembling that of the tooth-ach in the human body, of which I shall give the following instance. About the period above mentioned, a distiller sent me an aged horse, in order to inspect his mouth; the accounts I received from him were, that he seemed much inclined to eat dry food, such as hay, oats, &c. but that he no sooner filled his mouth with the former, and attempted to chew it thoroughly, than he let it drop out; he then took up a fresh quantity, which after a few turns in his mouth he dropt in the same manner as the former, without being able to chew it so small as to swallow it;

the oats, &c. which he had eat, were passed whole; in such circumstances, his body was considerably emaciated from the want of nourishment, as the only support he had had for some time, was from grains and other dregs about the distillery, which he swallowed in the state they were given him. On inspecting the horse's mouth, I observed a part of the outer cheek-tooth (or grinders, as they are commonly called in horses), on one side of the upper jaw, overgrown, at the same time projecting over the under tooth, and so long, that it reached the gum on the under jaw; hence, when the horse attempted to chew his food, this overgrown tooth fretted or wounded the jaw below it; from this last circumstance, it may be inferred, that the pain arising therefrom made the horse give up the attempt of chewing his food, as related above.

After this excrescence on the tooth was broke off, the horse eat very heartily of whatever kind of dry food he could come at, he recovered his flesh, and strength, and became as useful to his master as formerly. On inspecting the part of the tooth that was broke off\*, it was observed to be hollow longitudinally, it likewise had a large hole transversely through the enamel, which admitted the thick end of a hen's wing feather, at the same time, it had all the appearances that a rotten tooth has, when drawn for the tooth-ach in the human body.—From the case now mentioned, it will be obvious how necessary it is to inspect the mouths of horses when they do not feed well, as even middle aged horses are sometimes troubled with such sharp excrescences on the teeth; when they rise on the outside of the jaw, they wound the cheek in mastication or chewing; when on the inside, which is more rarely

\* This tooth I have still by me.



to be met with, they wound the tongue; when they project beyond the end of the teeth in the opposite jaw, as mentioned above, they not only wound the opposite jaw, but their length prevents the teeth or grinders from coming so close together as they ought to do, in order to break down the food minutely, so as to render it fit for digestion, to be converted into nourishment. In books of farriery, these excrescences are termed *wolves teeth*. It is a pity a good old servant should be lost through the infirmities of age, when his complaint may be so far palliated, as to prolong his services; yet many good aged horses are lost from not attending to such circumstances as have been now mentioned; for although horses in such situations can make shift to live on green succulent food, whilst it is good, and which does not require much chewing, and, at the same time, perform their usual labour, yet when they come to be fed with hard dry food towards the end of autumn, it occasions a very material change; their loss of flesh, &c. soon discovers that there is some defect, either in the digestive powers, or in the food not being properly broke down; hence, from the want of nourishment to support them under the natural faintness, &c. which prevail in the constitution of horses during the time of moulting, it is observed, that more aged horses die at this season than at any other period.

As the disorders which commonly prevail at this time amongst horses, proceed in a great measure from catching cold, together with the sickness attending the moulting, horses are differently affected, according to circumstances of habit of body, and the treatment they may be exposed to; some are affected with colds in the head, attended with inflammation and swelling of the glands about the throat and jaws, which too

frequently, from want of proper care, terminate in the glanders; hence this disorder is frequent at this season: some horses are affected with coughs, and other disorders of the lungs. Rheumatism is likewise common in different parts of the body, particularly in the neck, which is called the *chords*. Epidemical diseases frequently originate at this period, and continue with more or less violence through the winter, and sometimes till towards the spring. Fever is likewise common, together with a variety of other complaints, which would be tedious to mention. All these disorders, as I have formerly observed, are forwarded from the above circumstances, together with horses breathing a heated foul air in their stables, and their bodies exposed suddenly to the chillness of the weather, before their coats of hair have grown sufficiently thick to resist the cold, &c. for it is observed in those horses who run abroad in the fields day and night, that they moult much sooner in the season; by which means they are sufficiently guarded against the severity of the weather when it becomes cold and damp; neither is it observed that they are so liable to be affected with those epidemical diseases which prevail amongst horses that are kept in too warm stables. This sickly disposition amongst horses continues with more or less violence till such time as the weather turns more favourable and dry, or that the frost sets in. It commonly commences, if the weather is moist, cold, and damp, about the middle of October, and continues, till towards the middle of December: after which, if it is favourable, horses generally turn more lively and vigorous, and acquire their usual spirit, and healthy appearance, &c.

From the hints now offered, it may be observed, that as horses are generally more weakly at

the time of moulting towards the end of autumn than at any other season, their exercises or labour, when circumstances will admit, should be moderate. Their feeding should be increased in order to strengthen and support them during this period. It ought likewise to be of the very best quality, as old hay, old grain, *that is*, of the preceding years growth; and if the grain that is given them was broke down in a mill, it would prove more nourishing than in any other way it could be given them. New hay, or new grain of the same year's produce, ought to be avoided, as it is extremely hurtful to horses, who must undergo severe labour, or active exercises, of which I have formerly taken notice of. Good rubbing and frequent dressing are likewise of great benefit.

All evacuations, such as bleeding, purging, rowels, &c. ought to be administered with caution, as such prescriptions contribute greatly to increase that natural weakness, &c. formerly mentioned, which prevails in the constitution of horses at this period. At the same time it is to be understood, that horses are not by any means to stand too much at rest in the stable. Fresh air, with moderate exercise, when the weather will permit, being absolutely necessary to promote their health; neither is the proper use of the above prescriptions to be neglected when they are thought necessary and prescribed with judgment. All the precautions formerly mentioned, with respect to their stables, ought to be attended to, that they are kept clean, well ventilated, and kept moderately warm. Body-cloths, however necessary they may be thought for keeping their coats or hair fine, smooth, and clean in the stable, ought to be dispensed with, as horses cannot with propriety be rode with them; they must therefore be stripped the moment they are to go

abroad, even although they should happen to be in a strong perspiration at the time; by which means they are liable to catch cold, &c. And surely the health of a horse is of much more consideration to his proprietor, than the looks or appearance of his coat of hair, especially when it is considered, that good rubbing and frequent dressing will produce the same effect on the appearance of the hair. At the same time that this operation will in a great measure prevent the consequences above mentioned, of rendering horses so very liable to catch cold. One single rug or sheet is sufficient covering for horses whilst in the stable: more proves hurtful.

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## C H A P. XVI.

## O B S E R V A T I O N S

## O N

## L A M E N E S S .

**T**HE steps of a horse, in a sound state, are equal and uniform; a certain harmony subsisting in the motion of the whole body and limbs, any deviation from this harmony, or defect in moving the legs, is termed lameness.

Various are the causes which may occasion lameness, and frequently a combination of causes may take place at one and the same time in different parts of the same limb; for instance, a prick with a nail in the foot, and a strain in the

tendons of the legs, the ligaments of the joints, or in the shoulders, happen frequently together; for, as the pain arising from the nail in the quick causes the horse to trip and stumble in riding, an exertion to save the pained foot may, and indeed frequently does, occasion the straining of the ligaments of the joints, or the tendons, &c. of the legs; and thus a complication of the causes of lameness is produced. The same effects are likewise produced from excrescences growing upon the bones of the legs, which occasion pain; an exertion of the horse to save the pained limb may occasion the straining some of the muscles in the shoulders, &c. Here it may be necessary to make a remark on what is commonly, though very erroneously, called a *shoulder-slip*; this phrase is much in use, and may be supposed to imply a dislocation or a separation of the scapula or shoulder-blade from the ribs, a circumstance that never can happen to this bone, from the nature of its junction with the ribs; for the scapula or shoulder-bone is not fixed to the body by any articulation or joint, but by opposition, that is, laid along the outside of the ribs, and there fastened by the muscles, &c. which lie both on the inside and outside of the shoulder-bone; hence, therefore, it is evident, that the muscles and tendons of the shoulders may be over-stretched or strained, but the bone itself cannot slip out of its place without a force sufficient to destroy the texture of the muscles, &c. which form the junction with the ribs; the ligament which surrounds the articulation where the humerus joins with the scapula, at the point of the shoulder, is no doubt liable to be injured from strains, &c. in common with other joints of the body; but I never knew nor heard of one instance of its being dislocated in a horse, although it is possible

that it may happen. Hence, therefore, the term of *shoulder-slip* is improper, and only tends to mislead the young and unexperienced.

Lameness frequently proceeds from tumors growing upon the bones of the legs, or on those immediately connected with them; these are commonly termed in horses splents, spavins, osflets, ringbones, &c. and are distinguished or named from the particular part of the limb on which they grow. But, as these bony excrescences, (or exostoses, as they are called in the human body), are not limited to particular parts of the legs, but grow on every bone of the body, and sometimes are concealed in such situations, that it is impossible they can be discovered, although their effects in causing lameness, when connected with the parts that are conducive to motion, are very apparent; instances of which might be met with almost every day, if horses were more frequently dissected. Thus, a shoulder-bone, which I had carefully preserved, and which is now in the possession of the right honorable the Earl of Pembroke, has an exostoses of this kind, about the size of a large nut, on the thinnest and most transparent part of the bone on its inside, which is placed next to the ribs; the horse was lame for several years before his death, but the cause of his lameness could never be discovered till after dissection; this bony excrescence was so situated as to press upon the middle of the sub-scapulary muscle, and could not fail to impede its action, and occasion lameness.

Something of the same nature as these exostoses likewise takes place on the small bones of the joints, especially in those of the hind-legs; the osseous or bony matter proceeding from some morbid cause, forming a number of small tumors between the joints, and cementing or joining two



or more of these bones together, which, by impeding the action of the joint, occasions lameness.

Many people flatter themselves that they can take off most of these bony excrescences, by blistering, &c. even after they have acquired their utmost solidity; but those who are acquainted with the anatomical structure of the parts, the solidity and broad basis of these bony tumors, together with the firm connection they have with the bone on which they grow, will readily see the impracticability of this method succeeding. It is true, in some cases, where these tumors have a narrow base, they may be chopt off with a chissel; but, at the same time, it will be evident, that this operation must, in many cases, be attended with consequences much more detrimental to the horse than the splent, &c. would be in its fullest growth; besides, a caries in the leg-bone may follow from this operation, and the cicatrix that remains will disfigure the horse more than the excrescence would have done in its full extent; many splents of an uncommon large size are daily seen on horses legs, yet they go quite sound. Hence, therefore, it is obvious, that it is not the size or largeness of a splent that causes lameness, after it has grown to its full extent, but its interference with some of the other parts that are subservient to motion of the legs, where, by its connection, it impedes their motion, and causes lameness.

It likewise frequently happens, that these excrescences grow up between the two small bones on the back part of the fore-legs, and immediately under the tendons, the grooves or hollows that are there formed on the surface of the excrescence, whilst it is in its soft state, by the friction of the tendons, evidently show that they have been impeded in their motion, which will

produce lameness. In this situation, it becomes impossible to apply any remedy whatever to remove this excrescence; besides, it frequently happens that the leg-bones, in such cases, are considerably enlarged, for which there is no cure; this will be farther evident on inspecting the bare leg-bones, that may be found almost in every field where dead horses are laid; a number of such bones I have now in my possession.

Van Swieten, in his fourth volume of Commentaries, page 426. has the following remark on the effects these excrescences produce in the human body on their first rising, and which is applicable to the present purpose in horses: "But," says he, "as exostoses, (that is, bony excrescences), rising on the outside of the bones, must necessarily distend by degrees the incumbent periosteum, very troublesome and lasting pains will sometimes follow from thence, and such as are exceeding sharp; but yet will cease the sooner, if the exostoses be pointed." The same author mentions a case of some of these exostoses, from M. Petit, which grow upon the leg-bone with a sharp point, and rose above the surface of the bone the length of four geometrical lines, which, in the beginning was attended with very sharp pains, that gradually decreased, and at last went entirely off, leaving the bony tumor quite indolent.

That the same effect is produced by these excrescences growing on the leg-bones of horses, called splints, is very evident from their first beginning to rise on the outside of the bone, they distend or overstretch the periosteum which covers the bone; this creates pain, which is followed with lameness in horses; but, when this membrane is either divided, ruptured, or becomes numb by the distention it has undergone, the pain arising from it ceases, and, unless the ex-

crefence communicates with fome other bone, or preffes on fome of the parts that are conducive to motion, as the tendons, &c. the lameness goes off, although the tumor on the bone remains in its full extent.

Lameness likewise proceeds from rheumatic pains in different parts of the body, which frequently change from one place to another, and from cramps, spasms, sciatica, &c. all of which produce lameness; the true seat of which, in some cases, cannot be ascertained with any degree of certainty. Other causes of lameness are more easily discovered from their external appearance, or the symptoms which attend them, as a swelling of the parts affected, attended with pain to the animal upon touching them; of this kind are strains or sprains, whether of the ligaments of the joints, or the muscles and tendons of the legs and shoulders.

Lameness likewise proceeds from blows, occasioning contusions or bruises, or from wounds and punctures, from watery or running sores about the legs or heels, under every denomination whatever, as in these cases the legs are more or less swelled and inflamed, of course they are stiff and unfit for action.

Lameness likewise proceeds from long and continued violent exercise, which occasions too great a waste of the synovia or oily liquor which lubricates the joints; hence they become stiff, and, on the horse's moving, make a crackling noise. It is likewise produced from a variety of other causes, which are confined to the hoofs, as pricks from nails in shoeing, wounds in the hoofs from nails picked up in the streets, glass, sharp pointed bones, &c. which penetrate into the quick, from injudicious shoeing, and paring the hoofs to excess, or suffering them to grow too large and

long at the toes, by which the feet grow benumbed, a partial contraction taking place at the coronet and heels, or a contraction of the whole hoof, which is commonly known by the name of hoof-bound. This last disease is greatly forwarded by keeping the horse's legs and hoofs too hot and likewise too dry, by means of a great quantity of litter, and, perhaps, hot dung at all times under them. The practice of the Arabians, formerly mentioned, ought, in this respect, to be adopted, which is, washing the legs of their horses frequently through the day with cold water; and, although it be not expressly mentioned by the Count de Buffon, from whom the passage alluded to is quoted, yet it may be inferred, that the hoofs, at the same time, are moistened by the water. This kind of treatment is natural to horses hoofs; at the same time, it not only keeps the legs cool, but it contributes to brace and strengthen the muscular and tendinous fibres, and prevents swellings, &c. in them. How differently treated are the British horses in this respect? no such precautions are ever intentionally used to them, but directly the contrary; it may literally be said, that they are compelled at all times (when in the stable) to stand on a hotbed; at the same time, their hoofs are basted with grease, oil, tar, or turpentine, things perfectly foreign, and of a direct opposite quality to the intention of applying them; by which means, the generality of fine horses, that are much kept in stables, sooner or later, become cripples.

Lameness likewise proceeds from corns, running thrushes, from gravel insinuating itself between the shoe and the sole of the foot, especially in weak hoofs, or by forming a lodgment there, it at last penetrates into the quick which is called graveling.

There is likewise another kind of lameness peculiar to the hind-quarters, and which occasions a sudden jerking of the legs upwards on moving; by some it is called *string-halt*; and by others *click spavin*. This complaint seems to be a particular affection of the nerves of the legs, which causes this kind of involuntary motion, for which no certain method of cure has as yet been discovered.

From all these, and a variety of other causes, lameness is produced, the true seat of which, in many cases, cannot be discovered by any external appearances; hence, practitioners ought to be very cautious in giving their opinions of the causes of lameness, before they positively determine on the particular seat of the disease, or the cause which produces it, without their having a sufficient or a visible proof to support their opinion, and be enabled, from the nature of the case, to prognosticate the event, or the success, in performing the cure; for how frequently has it happened, from want of this precaution, together with a too superficial inspection of the parts, and too hasty a determination as to the seat or cause of lameness, that applications have been made to the sound parts, whilst the real cause has soon afterwards shown itself to be elsewhere, perhaps in the hoof, to the shame and confusion of the practitioner. Therefore, unless the cause of a horse's lameness is perfectly evident, it will be prudent to examine at all times the foot of the lame limb first with care and attention; and, if it should still appear doubtful, to inspect it next day a second time, and even a third time may be needful, rather than give too hasty or precipitate a determination with respect to the seat of a horse's lameness; for the foot is always to be suspected, especially after a horse has been new shod, or has had his shoes fastened, or when

the shoe lies too flat, and presses upon the sole, or when the shoe is made too narrow or too strait for the hoof, or if there is a corn in the foot. A horse may be lame from a nail, although it be not drove immediately into the quick, by its thickness pressing on the soft parts, or from its being bent inwards upon the quick, or, when drove too near, it will raise a small portion of the hoof, its own breadth, and force it upon the quick; and this last cause is the reason why horses are a longer time lame, after such accidents, than when a nail is drove immediately into the quick. A wound by a nail in the fleshy part of the foot, if timely discovered, and properly treated, suppurates kindly, and soon heals up; but a thin splinter, (as mentioned above), when raised from the hoof by a nail, and forced on the quick, having more lasting effects, the horse will be the longer lame; it may be compared to a particle of sand or gravel in a man's shoe, that is constantly pinching him, with this difference, that, in the former, it cannot be so easily or so soon removed.

From what has been said, it will be evident, that no certain rules can be laid down for discovering the true seat of lameness, in a horse, from the motion of the body; notwithstanding, a great deal has been said on this subject, by some people who have pretended to this discovery; for, when any of the parts which are necessary to the motion of the body are injured, the adjacent parts will be affected more or less, and thus, by a kind of sympathy, the whole limb, &c. will be affected; thus, a prick with a nail in the foot, will cause an inflammation of the whole leg; the shooting pains, in these cases, may affect the muscles of the shoulders, so as to obstruct their motion, and, upon touching or pinching these parts, the horse will flinch, and show a scale of



pain in them, and a stiffness in moving forward or sidewise, that will be very apt to mislead the unwary, and make them conclude that the cause of lameness is centered entirely in the shoulder, when, in fact, these are only symptoms which proceed from the shooting pains occasioned by the nail in the foot. There are few people, perhaps, who have not experienced something like this in themselves, from cuts, punctures, boils, &c. in the extremities of the fingers or toes, which frequently occasion the most acute pains in the arms and shoulders, &c.

The caution above mentioned will appear still more necessary, when it is considered that the bony excrescences, as formerly described, will excite the most acute pains whilst they are growing, by their extending or stretching the membrane which covers the bone, and which is always attended, more or less, with some degree of inflammation on the part, although in some cases, their situation cannot be perceived. And, if I may be allowed to reason from analogy, the pain that is produced from splents, spavins, &c. in horses, whilst they are growing, may be compared, in some degree, to the pain of teething in children, which continues till such time as the periosteum or membrane which covers the jaw-bone is divided or cut by the new tooth.

I have formerly hinted that horses are likewise subject to spasms in the muscles, and to cramps, &c. the real seat of which, or part affected, cannot easily be ascertained in horses from any external appearances; but our own experience of some of the like complaints, and deep-seated pains, will in some measure make us sensible how painful such complaints may likewise be in horses, and, of course, when they are put in motion, will occasion lameness.

Another cause of lameness still remains to be taken notice of, which proceeds from ill-made saddles, or from those that are not properly fitted to the back. This is a consideration of importance, both to the ease of the horse and the rider's safety; for it frequently happens that both suffer from inattention to this article; for, if the saddle-trees are too wide, and the saddle without a crupper, it moves too far forward upon the shoulder-blades, by which means the weight of the rider, together with the points of the saddle-trees, confining the motion of the shoulder-bones, impedes their action; this causes the horse to stumble, and frequently to come down; at the same time, the cartilaginous ends of the shoulder-bones, muscles, &c. are crushed and bruised; hence large swellings are produced on the shoulders or withers, which terminate in fistulous ulcers, and which, from the situation of the parts, are very difficult to cure, unless they are cautiously and judiciously managed. The other extreme, of having too narrow saddle-trees, should likewise be carefully guarded against, as they bruise the skin, &c. and occasion those hard lumps called fistulæ, or warbles, which must be extirpated with the knife, and, on that account, render the horse's back tender for a long time.

A saddle that is well fitted should press equally on every part of the back, the middle or ridge of the spine excepted, without touching, pressing, or even coming near the shoulder-blades, which ought by no means to be interrupted in their motion; the saddle pannel opposite to the hollows that are on each side of the spine, should be bolstered and well fitted up on each side, which will prevent it from moving too far forward on the shoulder-blades, even although no crupper is used.

I find that what I have recommended in a former treatise, (*On Shoeing, and Diseases of the Feet,*

with respect to the management of the hoofs of horses), has been greatly misunderstood, and that several people have expected cures from it, which I never promised; and, upon its not succeeding to their wishes, have condemned the practice in general. Some have had boots made for their horses legs, which they filled with water, in order to keep them cool and moist at all times; others have had the pavement in the stall taken up under the horses fore-feet, in order to make a hole, which they filled with clay and water; and all this with a view to restore soundness, &c. to lame and battered horses. I would here beg leave to observe, though, I have always recommended coolness, and a certain degree of moisture, as most natural to the legs and hoofs of horses, by way of preventing diseases in these parts, yet I never once said that such means will cure diseases there, when they have once taken place. It is very obvious that the legs and hoofs of horses in a natural state, that is, running at grass, are more exposed to coolness and moisture than to the opposite extreme of heat. When kept in the former situation, they are always found to be in the best state, both with respect to the quality of the hoofs, firmness of the muscular fibres of the legs, and soundness, &c. but, when they are kept too hot, and, at the same time, greased and oiled, the pores of the hoof are shut up, the natural perspiration is obstructed; hence they become parched, dry, hard, and brittle, and greatly disposed to contract or grow narrow in their dimensions, which affect the soft internal parts within the hoof, and hence produce lameness. Besides, great heat, as I have formerly observed, when applied to the legs and hoofs, occasions an accumulation of blood to them; hence a fulness and distension of the vessels within the hoofs, and

swelling in the legs. On the contrary, a moderate degree of coolness repels this fulness of the vessels, braces the muscular fibres of the legs, &c. which keeps them firm and clean limbed, and free from any disposition to swelling, &c.

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## C H A P. XVII.

## O B S E R V A T I O N S

O N

## BEATING OR ILL-TREATING HORSES.

**S**ELF-PRESERVATION is natural to horses as well as to other animals; they therefore endeavour to avoid or shun every thing that to them has the appearance of danger. This they do, either from natural instinct, from what may be called in them memory, if I may be allowed to use that expression, or from the impression of fear or pain they have felt on former occasions, when particular objects present themselves to their view, or on hearing certain sounds. Thus, fear of pain will restrain a dog from taking a piece of meat out of a man's hand, if he has been beat on a former occasion for attempting it. A sprightly horse will be greatly agitated by fear, from hearing the crack of a whip, or upon its being held up to him, because he has suffered pain from it formerly.

The reason why horses are generally rendered vicious, is mal-treatment of some kind or other

on their being first handled, and in the breaking; the effects of which remain longer with some than with others, according to their tempers or dispositions; for they possess these peculiarities as well as mankind, of which there are considerable variety, and which are not necessary here to particularize, as the method to be observed with them in general is the same. For, if we wish to have them docile and tractable, we will succeed much better by familiarity and caresses and gentle usage, than by force and chastisement. We ought, in this respect, to take a lesson from the Arabians, whom I had occasion formerly to quote, and whose horses, it is to be observed, are remarkably tractable and docile, and from whom the finest horses in Europe are descended. Buffon says, in vol. III. page 368. "That, as the Arabs live in tents, these tents serve them likewise for stables. The mare and her foal, the husband and his wife and children, sleep together promiscuously. The infants often lie on the body, or on the neck of the mare or foal, without receiving any injury from these animals, which seem afraid to move for fear of hurting them. These mares are so accustomed to society, that they submit to every kind of familiarity. The Arabs never beat their mares, but treat them gently, and talk and reason with them. They are so careful of them as to allow them always to walk, and never spur them, unless the occasion be very urgent. Hence, whenever the creatures perceive the rider's heel make an approach to their sides, they instantly set off with incredible swiftness, and leap hedges and ditches as nimbly as stags. If their rider chances to fall, they are so well trained, that they stop short, even in the most rapid gallop."

It has been observed, that the tempers and dis-

positions of horses differ as much as in the human species, and which ought to be particularly studied and attended to by those who go about them, and more so in the person who breaks them, whose province it is to form their manners and dispositions, together with that of their actions; at the same time he is to correct them from vicious habits, in the doing of which the greatest caution is necessary: but chastisement with severity is always to be avoided.

We frequently meet with horses who have been ill used in the breaking, that scare or bogle at almost every object they meet with on the road. This, together with other causes formerly mentioned, may proceed from the impression of fear, or whatever it may be called, which remains with them from being beat on such occasions, or on seeing such objects formerly. The animal, for ought we can say, knows nothing to the contrary, but that it is the object he sees before him that inflicts the punishment he feels, or apprehends is to follow, from the presence of such an object before him, and hence endeavours to fly from or to shun it. Chastisement, in such cases, always increases the animal's fears, and makes him worse. But soothing words, and stroaking his neck, &c. gently, will pacify him, and reconcile him to the object that scares him. He should likewise be suffered to stand still till such time as his fear abates; at the same time he will naturally use another of his senses to satisfy his fears, which is that of hearing. If there be nothing to alarm that sense, his fear soon subsides. The constant habit of gentle usage towards horses, especially on such occasions, will banish this timidity entirely from them. It is the same with horses in a variety of other respects: thus a sprightly horse, once ill used, on his being first shoed, will be afraid of a



farrier ever afterwards; and the sight of a smith's forge will always put him in a tremor.

The sense of hearing is very acute in horses. I have known many of them distinguish when the farrier was present, who shod them, and show all the symptoms of fear on hearing his voice only. It will therefore be the interest of every farrier to avoid or to prevent the using or treating horses ill on their first being shod; for, although he should have a little extra trouble on these occasions, (and which he ought to be paid for) it is of no consideration when compared to the constant trouble and danger in shoeing such horses afterwards.

As horses thus readily know the voice of individuals, they soon learn to distinguish the tone of soothing, or that of anger, in every language where they happen to be situated; and it will be found, that where horses are accustomed to be directed by the ear, that is, by words spoken familiarly to them, that they are by far more tractable and pliant than where the whip is always used.

The observation with respect to horses that scare or bogle at objects on the road ought particularly to be attended, as it is frequently followed with fatal consequences to their riders, and is sometimes hurtful to themselves, as the sudden or violent exertions made on these occasions have sometimes produced incurable lameness.

I would likewise offer one advice to such as are bad riders, or who are not much accustomed to it, which is, never to wear spurs, for this reason, as they are not acquainted with the proper method of sitting in the saddle, they grasp the horse's sides and belly tight with their legs and heels; at the same time they turn out their toes. From this position, the spurs, at every jolt of the horse,

are forced into his sides. Hence, the horse will, as he has been taught, exert himself to the utmost of his speed, and run off with his rider. The horse, at the same time, will naturally bound and kick, till he frees himself from the spurs that so cruelly torment him.

It is much the same with timorous riders on the apprehension of any danger. They may be said to communicate the impression of fear to the horse by their suddenly grasping his sides with their legs and heels, in order to keep themselves firmly seated in the saddle. The horse, naturally expecting the spurs, immediately sets off at full speed.

Many horses, from a variety of causes, are apt to trip and stumble when travelling on the road. The whip and spurs are too frequently applied by way of chastising them for this fault. Hence those horses, who are much addicted to tripping or stumbling, soon become sensible of what they are to expect from a repetition of this blunder; which no sooner happens, than in order to avoid the punishment they dread, they exert themselves to the utmost of their power to recover their feet, and suddenly spring forwards or sideways, to the great danger of unhorning the rider. It likewise frequently happens, that in their attempts to recover themselves from the first stumble, that through fear, &c. they often fail in their endeavours, and tumble headlong.

I have hinted above, that there are a variety of causes which contribute to make even the surest footed horse trip and stumble at times; and, in the cases of others, which when duly considered, ought to screen them from chastisement they do not merit.

It has been frequently hinted, that if a saddle

comes too far forward on the shoulders, that this circumstance, together with the weight of the rider, prevents the free action of the shoulder-blades, of course the horse must unavoidably trip and stumble. Every thing about the feet that makes the horse go uneasy, will likewise operate to produce the same effect as weak hoofs, whether naturally so, or occasioned by bad management. Too strait, or too heavy, thick, ill-formed shoes, the nails drove too near the quick, diseases in the feet, as corns, running thrushes, hoof-bound, cracks in the heels, &c. to which may be added the suffering the hoofs to grow too long towards the toe, by which means the horse's toe strikes the ground before he has made a full step, whether in walking or trotting, of course he will trip and strike the stones that lie in his way, and drive the loose ones in every direction around him.

Horses likewise stumble from debility or weakness; this may either proceed from a natural weakness of body, or from fatigue, or when overloaded by too heavy a rider in proportion to their strength, or faintness from low diet or poor keeping; and I have frequently remarked of hearing more complaints of horses stumbling about the end of autumn than at any other season of the year, which I have always attributed to the natural weakness which prevails in their bodies at that period, when they are moulting, and more especially in those horses who are kept on low poor feeding, which adds to it.

## C H A P. XVIII.

## O B S E R V A T I O N S

O N

## TRIMMING HORSES EARS.

ANY observations on this head will be thought superfluous and trifling by many people, who think this operation not only ornamental, but useful and even necessary to horses. But as the plan I have adopted, which is to treat on whatever is hurtful or beneficial to horses, I hope that will apologize for the observations I am about to make.

The ears of horses, like other animals, are covered on the inside with a short down, intermixed with long hairs, which line their external cavity; the use of which seems designed by nature to prevent harsh sounds from making too great an impression upon the brain, and likewise to prevent the cold air, rain, dust, flies, &c. from annoying the internal ear.

The means commonly used to remove this down, &c. is by the scissars, the flame of a candle, or that of a burning torch. Both the latter are cruel and barbarous, and cause a deal of pain to the animal, not only from the blisters that sometimes rise on the ears after this manner of singeing them, but likewise from the means that are used to make horses stand with patience to

undergo the operation, that is a *twitch* \* on the nose; and perhaps if he is troublesome to the operator, one put on the other ear.

It is to be observed, that horses are very much guided or directed by the sense of hearing. This is obvious in those that hear distinctly, (for many of them, particularly the finest kind, as they only are liable to this kind of treatment, have the sense of hearing considerably blunted, if not rendered quite deaf from the above operation), from the motion of their ears, and the direction they give them to whatever quarter any sounds come from, the attention they pay to what passes around them, or to what is spoke to them.

As this operation is generally first performed on young horses at the time they are breaking, it is the more hurtful, as the uncommon sounds, which are entirely new to them, and to which they are then more exposed on the road or in streets, must make the greater impression on the sense of hearing; such as the rattling of carriages, drums, &c. and perhaps it may be owing to the above cause only that many horses are timorous to approach, or to pass carriages, and remain so ever afterwards.

Another disadvantage which attends this operation upon the ears of horses, is, that they will not go on cheerfully, when travelling, in opposition to the wind, more especially if it rains; for as the wind and rain gets free access into the ears, they are continually shaking their heads and endeavouring to turn from it; and those who are of a more impatient temper, will wheel suddenly round, in order to avoid what gives them so much uneasiness. They are then said to be

\* An instrument that squeezes the nose

restive; the whip and spurs are applied by way of chastisement for a supposed fault only.

From what has been said, it will be obvious, that from the constant practice of taking away the natural covering from the inside of the ears, that the internal ear must be exposed to be considerably injured, particularly from cold, dust, &c. which blunts the sense of hearing, and perhaps causes deafness; for it is observed in those horses who have been much used to this treatment, that they lose that lively, active motion of the ears, and appear dull and inattentive to what passes around them, and even to the voice of their keeper.

What has been just now observed with respect to the trimming the inside of horses ears, may be applied to the practice of cropping, or rather cutting horses ears, almost close to the skull, as it produces the same effects on the sense of hearing; besides another disadvantage attending it, which is the difficulty of keeping a collar or bridle on their heads.



## C H A P. XIX.

## OBSERVATIONS

## O N

## FRICTION, OR DRESSING HORSES.

**I** HAVE hitherto mentioned currying, dressing, and cleaning of horses, in a cursory manner. In this place it will be proper to enlarge more fully on the advantages that arise from it.—As exercise acts as an assistant to the heart in promoting the circulation of the fluids, in like manner friction, on the surface of the body, by means of the curry comb and brush, contributes to forward the circulating fluids there, and promotes that insensible perspiration through the pores of the skin, which is so conducive to the health of horses.

The general intention of currying and brushing horses that are kept in stables, it would appear, from the manner of performing it, is with a view only of taking away the dust and dirt that may be collected on the hair. But, when considered in a more extensive point of view, it will be found, when properly performed, to be a very beneficial operation to horses, as they naturally perspire much through the pores of the skin. When this operation is neglected, or slightly performed, the perspirable matter hardens in the pores, it remains lodged at the roots of the hair,

and has the appearance of a whitish or brownish dust, and sometimes like small scales, which, for the most part, creates an itching; the skin, at the same time, generally appears dry and hard, the hair stares or stands on end, (in place of lying smooth and shining), which always denotes a constriction of the pores of the skin.

Van Swieten, in his Commentaries, observes on friction to the human body, "Which\*" he says, "is in a manner the alternate pressure and relaxation of the parts of the body, gentle friction presses the veins only, whereas a stronger presses also the arteries. By pressing the veins it accelerates the motion of the venal blood towards the heart; and, by this means, the motion of the heart is quickened, and of course, the blood is propelled with a greater velocity through all the vessels. The vital powers may be increased therefore by friction to any degree, without any foreign addition to the body; for a burning fever may be kindled by friction in the coldest hydropical person. In those bodies where none of the viscera destined to form the chyle, discharge their office through a state of inactivity, the rubbing the abdomen with coarse woollen cloths in a morning fasting, has wrought wonderful effects. And, for this reason, the ancients set a high value upon frictions, both as a preservative of health, and serviceable in the cure of many diseases." The same author farther observes, that, "if a horse be suffered to stand in the stable without dressing, in a few days he will become useless†; but, if his skin be curried daily with an iron comb, and rubbed with a brush, he will continue active for

\* Vol. I. p. 67.

† He probably means unfit for active exercises.

many years." And, in page 376, he observes the great use of frictions in resolving obstructions: "I have seen," says he, "an indurated parotid gland, after many very good applications have failed, resolved by being well rubbed with woollen cloths for an hour together, twice a-day, after having been exposed to the vapour of warm water and vinegar. The like also has been seen in the glands of the neck, when they have been strumous."

*Columella* likewise observes, that "\* the bodies of cattle ought to be rubbed down daily, as well as the bodies of men; and oftentimes it does them more good to have their backs well rubbed down, than their bellies filled with large quantities of provender."

It was customary with the ancients to advise the use of baths and frictions, after long journeys, to the human body; and this custom still prevails in Asia.

From what has been observed on friction or rubbing to the human body, it will be evident how much benefit may be derived to horses from good rubbing and dressing, as frequently as possible; but more especially when they are cold and chilly, after being over-heated, or from being suffered to stand in the cold air, tied at the stable-door; friction becomes then the more necessary, as it produces a gentle heat and warmth all over the surface of the body, and prevents stagnation of the fluids in the vessels on the surface, and promotes a free perspiration through the pores of the skin.

Notwithstanding the great advantages that may be derived to horses when in health by friction,

\*. De Re Rustica, lib. vi. cap. 30. p. 597.

or rubbing their bodies, yet there are cases of disease in which it may prove hurtful on certain parts, as in swellings of the legs, attended with inflammation, where rubbing with the hands is frequently recommended, or when there is a discharge of sharp ichorous matter from the pores, or in cracks in the heels, attended with great pain, or in wounds or punctures; as all these cases are attended with more or less inflammation, friction then proves hurtful on these parts; as the heat there is already considerable, friction will add to it, and, of course, increase the disorder; besides, as the vessels, in such cases, are too full and distended with blood, the force that is applied in rubbing the legs renders these vessels liable to be ruptured.

Washing horses with cold water, in order to clean them, by throwing whole pailsful on their bodies when they are over-heated, immediately after posting, &c. which, I am informed, is now become fashionable on the post roads; and, it is said, that no bad consequences follow from it, of which I have great doubt. If they are well rubbed down immediately after such exercises, there is no need for washing them with cold water, and then rubbing them afterwards, as the latter operation is sufficient to clean them, without running any hazard of washing them with cold water, as cooling the body too suddenly always constricts and shuts up the cuticular pores, and prevents that perspiration which is found so essentially necessary for promoting the health of men, and of those animals who perspire through the pores of the skin; and, it is probable, that the only thing that prevents immediate bad consequences following from this manner of treatment, is, that such horses are very soon after-

wards put to active exercises again by posting, &c. by which the strong perspiration they are so soon put into, carries off the bad consequences that might have been expected from it; for not only daily experience, (the single instance of the present practice above mentioned excepted) but the experience of past ages have demonstrated the bad consequences that commonly follow from the too sudden application of cold, whether it be water or air, to the human or animal body, when over-heated; for, although the constitution of the animal body be such, that at times it can withstand many shocks, alterations, and irregularities, yet prudence points out the danger that may follow, and which ought at all times to be avoided. No doubt there may be exceptions to general rules, and, in this instance of washing horses, it is not to be depended on, as too sudden transitions cannot fail, in certain circumstances, or habit of body, to produce some kind or degree of disorder in the constitution, when disease will be the consequence; instances of which will readily occur to every one, where both men and horses have undergone very sudden transitions from cold to heat, and from heat to cold, where some have escaped any bad consequences from it, whilst, at the same time, it has proved fatal to others; hence, therefore, it will be prudent to avoid the washing of horses, when they are over-heated, with cold water, more especially in cold chilly weather, as it answers no good purpose, and in which there is danger to be apprehended. For the same reason, washing the dirt off horses legs, belly, and thighs, with cold water, immediately after they have performed a stage and have been over-heated, should likewise

be avoided till they are cool, well rubbed afterwards, and thoroughly dry; but which is very seldom put in practice.

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## C H A P. XX.

### O B S E R V A T I O N S

#### O N T H E

### MANAGEMENT OF HORSES WHEN TRAVELLING.

**T**HE frequent applications that have been made to me for directions concerning the management of horses, previous to, or when on a journey, induces me to give my readers a few short observations on that subject.

It ought always to be remembered, that, when a horse is intended for a journey of any length, and the prospect of continuing it for some time, that he be properly prepared for it, by good feeding, and that he has been in the habitual practice of regular and daily exercise; for, without a due proportion of the latter, no horse can be in a proper condition for travelling, or undergoing any fatigue, without danger of being laid up by some acute disease; for which reason, it will be obvious, that a horse which is too fat, or full of flesh, or that has been kept long on soft feeding, or newly from the hands of a dealer, or running late at grass, or that has been accustomed to stand much at rest in the stable, or those that are



roads are dry and dusty, the washing of horses legs proves very refreshing; when the roads are dirty and wet, it is the readiest method of cleaning them; but they ought always to be well rubbed afterwards.

It may be needful to remind young travellers, that they have their horses shoes inspected at every stage, and, whatever, is amiss about them, or the clenches of the nails, rectified; likewise to observe that the saddle has kept its proper place, in order to prevent its injuring the back, or coming forward on the shoulder-blades.

It frequently happens, that the skin of horses, who have not been accustomed to perform long journeys, becomes scalded by the friction of the girths, and likewise on the under part of the breast, between the fore-legs, where the skin is loose and full of wrinkles; this proceeds entirely from neglect, in not cleaning the sand and dirt from these parts, but suffering it to cloat among the hair, it collects in lumps, and, by the continued friction in the horse's moving, it produces the above effect, which is attended with pain to the animal, and causes a contracted step in his going; and when it is not taken notice of in proper time, the parts become inflamed and swelled, which proves a great hindrance to the horse's travelling; when the hair is fretted off by the girths, they should be washed clean from the sand and dirt, and dried thoroughly before a fire, after the horse is done up for the night; at the same time, it will be proper to cause the sand and gravel to be picked out from below the shoes, and to wash out the smaller particles of sand that are apt to lodge there, as in weak hoofs it frequently occasions lameness. One great advantage that arises to the hoofs from being frequently washed and moistened with water, especially in dry warm weather, is, that it keeps them cool, a state which

is most natural to them, and which is much more beneficial than all the stopping and greasing which at present is so much in use. But, as this simple process of washing the hoofs with water only, diminishes the ostler's fees, at the same time that it creates more labour and trouble, he ought by no means to be a sufferer; the owner will, in the end, be a gainer by the exchange.

It is likewise proper to observe, that the saddle girths be not drawn too tight, especially on the belly; if the fore or point girths on the breast be drawn tolerably tight, that will be sufficient of itself, if the saddle fits properly, to keep it in its place. The girths on the belly, however tight they may be drawn, soon slacken as the bowels empty, and they only serve to give pain to the animal, by confining the viscera, and occasion a difficulty of breathing on the horse's first setting out, when the belly is distended with food; besides, in round barrelled or round bellied horses, especially if the belly is big, the back girths, the tighter they are drawn, contribute to push the saddle forward on the shoulders, in spite of every means that can be devised to keep it in its proper place.

Road-horses, on long stages, at any baiting place, about the middle of the stage, should get a little oatmeal mixed in about half a pail of water to refresh them; this not only quenches their thirst, by washing their mouths, &c. when the roads are dusty, but it invigorates them to perform the remainder of the stage; the oatmeal prevents any bad consequences that might arise to them from giving them cold water when they are heated, especially in such a small quantity at once.

It frequently happens on bye-roads, or little frequented inns and baiting places, especially towards the end of harvest, that horses are fed with

green oats in the sheaf, newly taken from the field, for want of other feeding; this is extremely hurtful to them, as it occasions faintifhnefs, &c. and frequently produces a diarrhoea or scouring, attended with great weaknefs. If poffible, in fuch f Situations, it would be prudent to get oatmeal for them, and mix it with a fmall quantity of water, only as much as is fufficient to moiften the meal, fo as to prevent it from blowing away by their breath in feeding: it would be the means of faving the life of many a good horfe, that otherwife falls a facrifice in fuch cafes from this kind of green feeding. When the oats are too new and fefhifh, oatmeal fhould always be got for them, if poffible, in their ftead, and given as above directed. Bread, of different kinds, is likewise a good fubftitute in place of new or bad grain, efpecially the coarfe wheaten bread, formerly fo much ufed to horfes, and known by the name of *horfe-bread*. But whatever kind can be got, if they will not eat it by itfelf, it may be rubbed down between the hands, or beat in a trough, and mixed with oatmeal, this will make very good feeding for horfes, and which moft of them will eat. A little extra trouble and care, in fuch cafes, ought not to be grudged for the benefit of fo ufeul and valuable creatures, on fuch emergencies.

Horfes on a journey, from the ftrong perfpiration they undergo, and the conftant feeding on dry food, are apt to become too coftive, this ought to be guarded againft, by giving them occasionally a mafh of fcalded bran, boiled barley, or malt, either by themfelves, or mixed in their oats, by way of a double feed. When a horfe fhows an inclination to ftale on the road, he fhould always be allowed to ftand ftill for that purpofe; and, if he has any difficulty in ftaleing, an ounce of nitre may be given him in his food

for a few nights following. It is of consequence to attend to this discharge, and also that by stool, as inattention to either of these frequently proves the source of many disorders.

Before I conclude this chapter on travelling, I would beg leave to prefer a petition in favour of the poor animal who is the subject of this treatise, and which is, the allowing him a little more time to perform the task required of him; 15 minutes more than what is allowed at present to perform a stage of as many miles, would save the lives of a number of horses yearly, besides the numbers that are lamed, and otherwise rendered useless by such severity.

As it is not foreign to the present subject, I shall here mention one observation on shoeing horses, which had escaped me when treating on that head in my former publication.

When the roads, &c. are covered with ice, it becomes necessary to have the heels of the shoes turned up, and frequently sharpened, in order to prevent horses from slipping and falling. As this cannot be done without the frequent moving of the shoes, which breaks and destroys the crust of the hoofs where the nails are drove, to prevent this, I have always recommended to those who were willing to be at the expence, to have steel points screwed into the heels or quarters of each shoe, which might be taken out and put in occasionally.

The method of doing this properly, is first to have the shoes fitted to the shape of the hoof, then to make a small round hole in the extremity of each heel, or in the quarters, about three-eighths of an inch in diameter, or more in proportion to the breadth and size of the shoe; in each of these holes a screw is to be made; the steel points are likewise to have a screw on them, exactly fitted to that in the shoes. Care must

be taken that the screw on the points is no longer, when they are screwed into the shoe, than the thickness of the latter. The steel points are to be made sharp; they may either be made square, triangular, or chissel pointed, as may be most agreeable; the height of the point above the shoe should not exceed half an inch for a saddle horse; they may be made higher for a draught horse. The key or handle that is necessary to screw them in and out occasionally, is made in the shape of the capital letter T, and of a sufficient size and strength; at the bottom of the handle, a socket or cavity must be made, properly adapted to the shape of the steel point, and so deep as to receive the whole head of the point that is above the shoe. In order to prevent the screw from breaking at the neck, it will be necessary to make it of a gradual taper; the same is likewise to be observed of the female screw that receives it, that is, the hole must be wider on the upper part of the shoe than the under part; the sharp points may be tempered or hardened, in order to prevent them from growing too soon blunt; but, when they become blunt, they may be sharpened as at first. These points should be unscrewed when the horse is put into the stable, as the stones will do them more injury in a few minutes than a day's riding on ice. A draught horse should have one point on the toe of each shoe, as that gives him firmer footing in drawing on ice; but, for a saddle horse, when they are put there, they are apt to make them trip and stumble.

When the shoes are provided with these points, a horse will travel on ice with the greatest security and steadiness, much more so than on causeway or common roads, as the weight of the horse presses them down in the ice, at every step he makes.

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